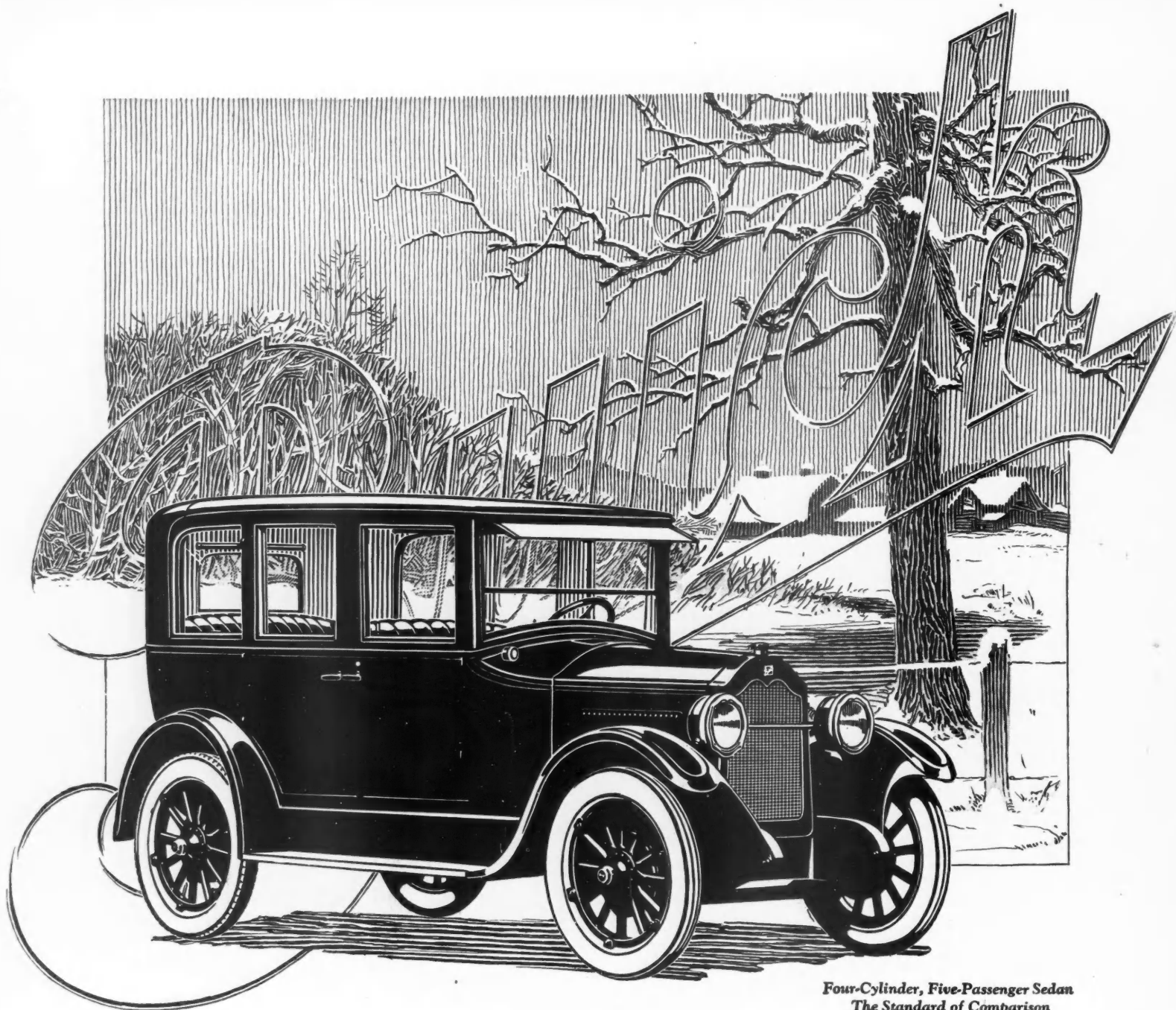


AMERICAN FRUIT GROWER MAGAZINE





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DECEMBER, 1923.

No. 12

Pruning and Fertilizing the D'Anjou Pear

by Gordon G. Brown and Leroy Childs
Hood River Experiment Station

THE SUBJECT suggested is a big one which may be approached from several angles. This discussion may be considered largely suggestive and based upon observations by the writers in the Mid-Columbia Districts, principally at Hood River, Ore. At present it seems inadvisable to draw other than general conclusions regarding many of the points raised. The D'Anjou is a pear which has been the hope and despair of practical horticulturists. Its virtues are obvious. It is a strong grower, shapely, requiring little pruning while young, generally hardy against winter extremes, and somewhat less susceptible to fire-blight than many other varieties. On the other hand, it is conceded as being a tardy bearer. Trees often delay heavy bearing, or what might be termed even moderate bearing, until the eighth, tenth or twelfth year. Such performance appears to be entirely inconsistent with the general behaviour of the tree even at an early age. Trees often blossom heavily at five and six years of age, but usually fruits are either not formed or else those which at an early date appear to have "set" fail to develop. As trees become older less difficulty of this character is experienced, but it may still be said that irregularity in bearing often prevails in some of our best cared for orchards. Trees healthy and apparently normal very often fail to respond with enough fruit to insure a profitable crop. Trees "white" with bloom not unusually produce indifferent yields. These characteristics appear to be widespread wherever this variety is grown.

Many explanations to account for these results have been offered. Obviously the environment is a limiting factor, all locations not being equally favorable. Originally the parent stock possessed characteristics which evidently are not "fixed." Distribution to locations favorable or unfavorable has undoubtedly played an important part. Evidently the influence of soil is considerable. At Hood River it appears that D'Anjous growing in moderately heavy silt loams possess earlier and more regular bearing habits than those on lighter types.

Pollination.

The question of pollination is as yet an unexplored field. That irregular results may be due largely to self-sterility or inter-sterility with the common varieties with which grown has been strongly hinted at. That certain varieties of pears are influenced strongly in this respect by altitude is known. In one Hood River orchard under observation, D'Anjous on an average bear more consistently where growing near Bartlett's than where growing alone. This premise, however, is subject to modification in many instances with respect to individual trees in the above orchard, there being notable exceptions.

In another orchard D'Anjous growing alongside Easter pear trees have been consistent croppers. That results are strongly influenced by seasonal changes during the blossoming season has been noted. This year at

Hood River a much heavier crop is evident in the Lower Valley, where comparatively warm weather and sunshine prevailed, than in the Upper Valley, which experienced less favorable conditions in this respect. There is reason to suspect that irregular bearing may be largely classi-

fy conditions within the plant itself with respect to nitrates, carbohydrates and moisture into four distinct groups.

The theory indicates that the behavior of a plant as regards growth and reproduction will depend to a considerable extent on the relative

the carbohydrates, makes for an accumulation of the latter, and also for fruitfulness, fertility and lessened vegetation. A further reduction of nitrates without inhibiting a possible increase in carbohydrates, makes for a suppression of vegetation and fruitfulness. (For detailed information see Oregon Station Bulletins 149 and 176.)

To recognize the group to which trees belong is often difficult. To draw rigid lines between any particular class and the one next to it is impracticable since they intergrade insensibly one into the other and yet, generally speaking, are recognizably distinct.

Experimental Work.

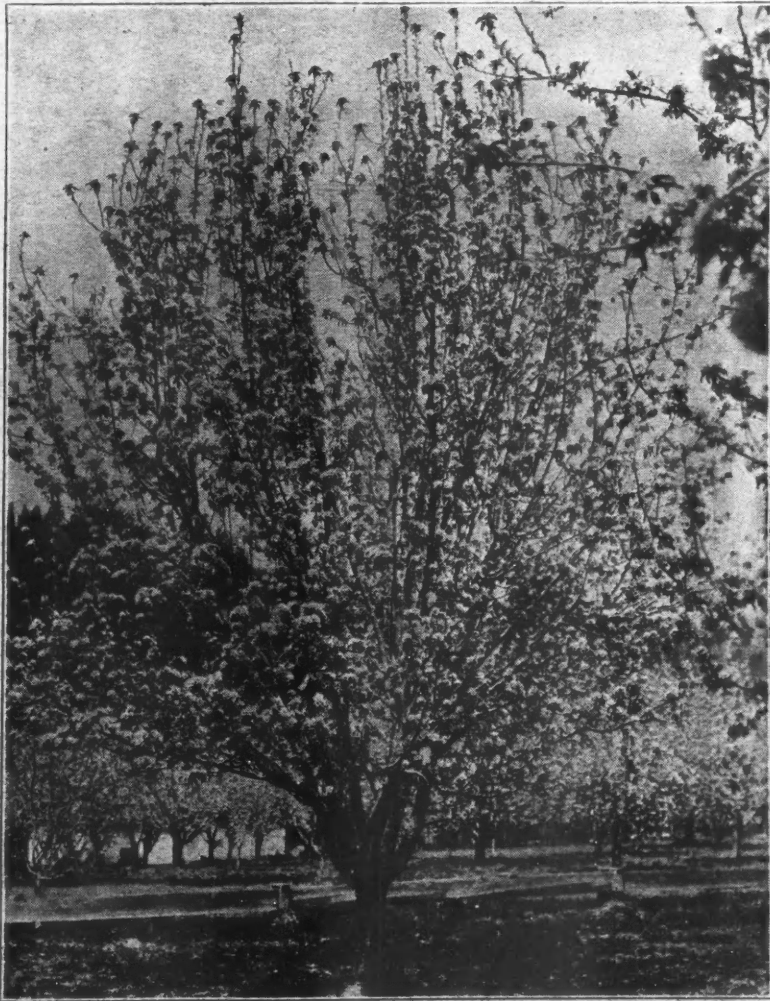
Observations and experiments have for a number of years been conducted by the writers in the Childs & Graff orchard at Hood River. It is desired to point out the conditions under which tests have been made. Two blocks of trees now in their eighth and fifteenth growing seasons have been under study. The altitude is approximately 1100 ft. The soil is a uniformly loose, deep, friable loam, formerly covered with dense fir. Favorable soil moisture conditions have been maintained by cultivation and irrigation; air and soil drainage all decidedly favorable. The older trees are set 20 ft. apart on the hexagonal and the younger trees 26 ft. on the square. Owing to the exceptionally heavy growth made by the older trees while young and the closeness of planting, a very crowded condition was created several years ago.

The writers wish, first, to state briefly the results of pruning the eight-year-old D'Anjous just referred to. Beginning with the summer of 1920 and thereafter during 1921 and 1922, 16 trees were pruned around August 1. This consisted of thinning out and light heading back to laterals. During the spring of 1921, 1922 and 1923, an equal number of trees were similarly pruned. As a check, 16 trees were left unpruned. Trees in all three blocks are growing under clean cultivated conditions. During the early spring of 1923 all were given a 2-lb. application per tree of nitrate of soda. The number of cuts per tree on the summer pruned block averaged 62 in 1921 and that of the winter pruned, 66 during the following spring. In 1922 the number of cuts (summer pruning) averaged 26 versus 91 (spring of 1923) winter pruned. The greater number of cuts on the winter pruned trees was influenced by the fact that relatively more lateral growth occurred than in the case of the summer pruned block.

Influence of Pruning.

The influence of pruning on trunk circumference and size of tree is significant. Measurements taken 2 in. above ground during the spring of 1922 and 1923, show that summer pruning apparently is most devitalizing; that winter pruning likewise exerts a similar influence to a less degree, and that trees receiving no pruning are larger and more vigorous.

(Continued on page 12.)



A typical 15-year-old unpruned D'Anjou in experimental orchard. Note closeness of planting and density of growth. Trees of this character have from six to eight thousand fruit spurs. One tree was estimated to have 80,000 blossoms.

fied as functional; that the character and proportion of stored food within the tree are responsible factors. Indeed there is much to support this point of view. Horticulturists have often referred to trees as being "in balance" or "out of balance" to explain certain responses. Of recent years a scientific explanation has been offered to show more clearly what we mean by the general terms thus employed. The original work of Kraus and Kraybill, and later enlarged upon by Harvey and Murneek,

proportions of available carbohydrates and nitrogen. Summarized they are as follows: Though there be present an abundance of moisture and mineral nutrients, including nitrates, yet without an available carbohydrate supply, vegetation is weakened and plants are non-fruitful. An abundance of moisture and mineral nutrients, especially nitrates, coupled with an available carbohydrate supply, makes for increased vegetation, barrenness and sterility. A relative decrease of nitrates in proportion to

American Grown Dates for American People

by Christine Emery

PALM orchards that spring like magic from the arid sands of the desert furnish convincing proof that ample capital, scientific methods, unwavering faith and painstaking perseverance will achieve a modern miracle when, down below sea level in the Valley of Coachella, the Imperial and other torrid valleys of southern California, in Arizona, Texas and New Mexico, we behold the fruition of all of these attributes for date stock, transplanted from African and Asiatic oases, find in those mellow reclaimed soils an ideal location for their fullest development.

Date Production Slow.

Despite the spectacular showing of recent years the work of date production has in reality progressed very slowly, for it was "way back in 1898" that the Bureau of Plant Industry imported the first Persian dates in a strictly experimental fashion. In 1904 the prospect of extensive commercial planting was first visualized and several years of intensely scientific work were devoted to acclimation and the adaptation of varieties destined to thrive under climatic conditions peculiar to the different sections of the desert lands of the southwest.

Reams of governmental red tape also wound sinuous lengths of limitation throughout the romantic history of date production in the United States, for even at the present time the offshoots of selective foreign stock must be obtained through the courtesy of the British and French governments who are in control of Egypt and Algeria, and it is only by means of these offshoots that date palms can be planted with the positive assurance that they will develop true to type.

Selection and propagation by the "seedling system" is at best a slow and uncertain process; nevertheless it has been brought to a gratifying degree of success by many intrepid growers, and fully one-half of the 1200 acres that today mark the intensive planting of dates in the Coachella Valley are "set" with selected specimens of carefully standardized seedling stock that is noted for its prolific production and the meritorious quality of its fruit.

According to exhaustive tests carried on during the past 17 years at the Government Experiment Stations at Indio, Mecca and Phoenix, approximately 90 per cent of the many imported varieties have proven unsuited to local cultural conditions and, thanks to this preliminary planting, a vast amount of money and the vexation and discouragement incident to repeated cropping failures has been practically eliminated.

Large List of Varieties.

As a result of these tests we now have a satisfying and expansive list from which to choose, for be it known that there are as many varieties of dates as there are of apples or pears and that each and every one of our accredited varieties, as though to reward the care expended upon them, have proven infinitely superior, in both palatability and productivity, to kindred types in the lands across the sea; yet even here, amid the tempt-

date" for it is so "dry" that it can be carried for long distances in one's pocket and still provide a compact, appetizing and enjoyable meal. Propagation of the Thoory must, of necessity, be somewhat slower than the trade demands for it is almost impossible to buy offshoots of this remarkably fine type, which is so preeminently "at home" in the nursery rows of southeastern California. Because there are so few trees of this sort available, all recent attempts to



Heavily laden "trees" like these delight the hearts of the date growers.

ing array of "improved varieties," the Deglet Noor, a wonderfully "full flavored" date that came from an Algerian oasis far out in the Sahara Desert, has not only captured critical public approval but established a new standard of excellence.

Large areas are also planted to Khadrawi's, a Persian date of soft texture and delightful quality. The Saidy, which had its source in the fertile delta of the Nile, has not been obtainable in sufficient quantities to make possible the much-to-be-desired, unrestricted commercial plantings, for experiments have shown that the tree is a reliable bearer and that the ripened fruit attains distinct superiority when allowed to "cure" or age before being marketed.

The Thoory is a valuable "luncheon

buy the scions or offshoots in Africa have resulted in failure.

Offshoots from the Hayany, the Amhat, the Eglani and the Tazizaot varieties were successfully imported within the past year and, in addition to those previously purchased, are making a most satisfactory growth. The Hayany has demonstrated its valuable qualities in the vicinity of Phoenix, where, because of its early ripening proclivities, it may be safely harvested before the coming of the rains, for more than all others the date is a fruit requiring sunshine and heat for perfect maturity.

Funds Advanced for Continuance of Work.

Because of inadequate financial aid from Congress, the Bureau of Plant

Industry found itself unable to import offshoots enough to meet the increasing demands for private plantings until individuals with unlimited resources came to the rescue, for more than a year ago when the future of the date industry hung in the balance, importation ceased and was resumed only when public-spirited "capitalists" and co-operative organizations in southern California, Texas and Arizona advanced the necessary funds for the continuance of the work, the individuals in each instance declaring that they "were willing to spend a million dollars, if necessary, in order to put the date industry on a firm basis."

Such faith and finance were destined to remove mountains of obstruction and after long negotiation the Bureau succeeded in importing the required stock in quantities commensurate with the prudent reservations of our foreign neighbors.

Upon their arrival the offshoots, like those produced in the palm orchards of this country, were "rooted" in propagating houses, built especially for that purpose, where the temperature soars to such "super-torrid" heat that even the most seasoned desert dweller dreads its acute "Turkish bath-like" propensities.

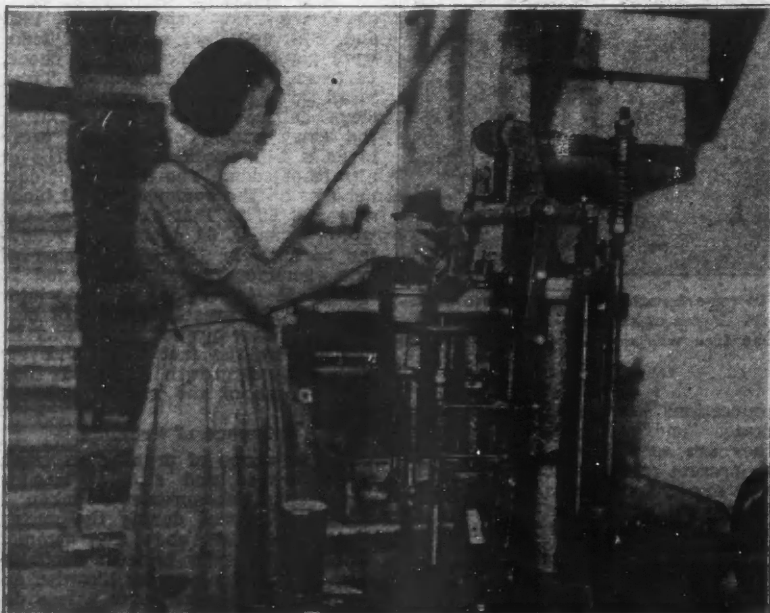
The shoots, when well rooted, are transferred to the nursery rows and in the course of three or four years they attain sufficient size and vigor to be utilized for orchard planting. All those of recent importation will, in the course of time, be assigned to growers who are already preparing vast stretches of land in which to receive them. Huge tractors crawl like diligent ants down their specified course among the thriftily growing palms, keeping the soil in the best tilth possible and greatly facilitating the work of irrigation for all labor is directed from the most efficient standpoint.

Rich Man's Hobby.

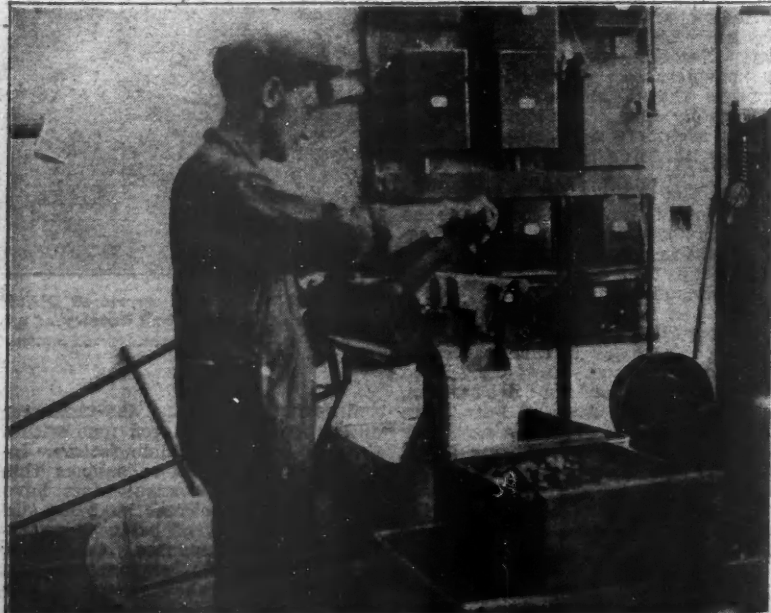
Date growing must, for an indefinite number of years at least, be regarded as a rich man's hobby. The cost of the 100 offshoots necessary for planting a two-acre orchard will reach a total of \$2500. Add to that the cost of the land, the labor involved in preparation and planting, plus the cost of water and the conservative estimate of \$250 an acre for actual yearly "maintenance," and you will begin to understand why date production is placed in the strictly prohibitive class.

"Who can afford to indulge in so expensive an avocation?" is the inevitable query that springs to one's mind. Down in the areas of the unbelievably fertile valleys that have

(Concluded on page 34.)



Packing dates in glass jars for the "fancy trade."



All poorly shaped fruit is "shredded" and used for cakes and confectionery.

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Prune the Bearing Tree for Better Fruit

by R. H. Roberts

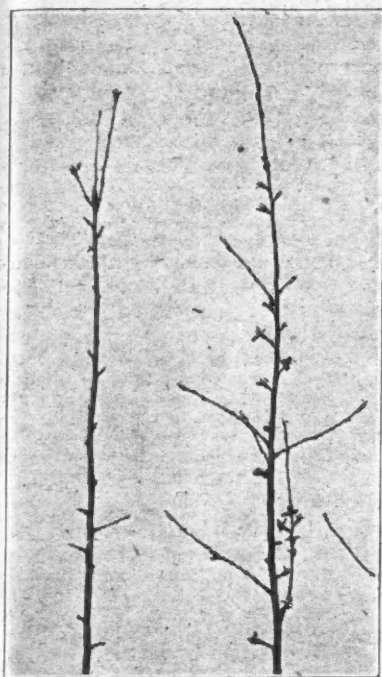


Fig. 1—Regularity of bearing seems to be related to the spur growth habits. Varieties which produce spurs with variable lengths (right) tend to bear regularly. Varieties which produce spurs with uniform lengths (left) tend to bear biennially.

WE HAVE outlined in a previous paper how to prune the young apple tree in order to secure the most profitable production. How to prune the bearing apple tree in order to obtain the best fruiting will now be considered.

We propose that the way in which a tree fruits depends upon the way in which it grows. Thus it is necessary to have strongly growing trees in order to secure large yields of fruit. This is illustrated by the fact that most orchard records are made when the trees are from 12 to 16 years of age. The reason that maximum production is reached at this age is because it is during this period that the trees have a maximum of highly producing wood. Trees of this age not only grow well but also have good fruiting wood all over the top. Earlier, they are too small for the highest production; later, they become more or less filled up with poorly producing wood and the grade, if not the total production of fruit, becomes poor. The

principal reason for pruning the young tree is to develop a top of well-balanced branches which will fruit uniformly. The main object in pruning the bearing tree is also to maintain a well-balanced and evenly productive top.

How to Prune.

How to prune the bearing tree may be seen by observing the way in which trees bear. Most trees bear a bulk of their crop upon spurs, the exception being such varieties as Rome, which frequently produce more apples from

by poor fruiting—either most all of the blossoms drop off or, after a heavy drop, still so many set that the size and quality of the fruit is poor. This condition is frequently followed by an off year. It is much better to have moderate blossoming, especially as this is usually accompanied by regular bearing. How may this be secured?

The answer to this question is found in the spurring habits of regular bearing trees as Stayman, Grimes and McIntosh. Figure 1 shows that such varieties tend to produce spur and short

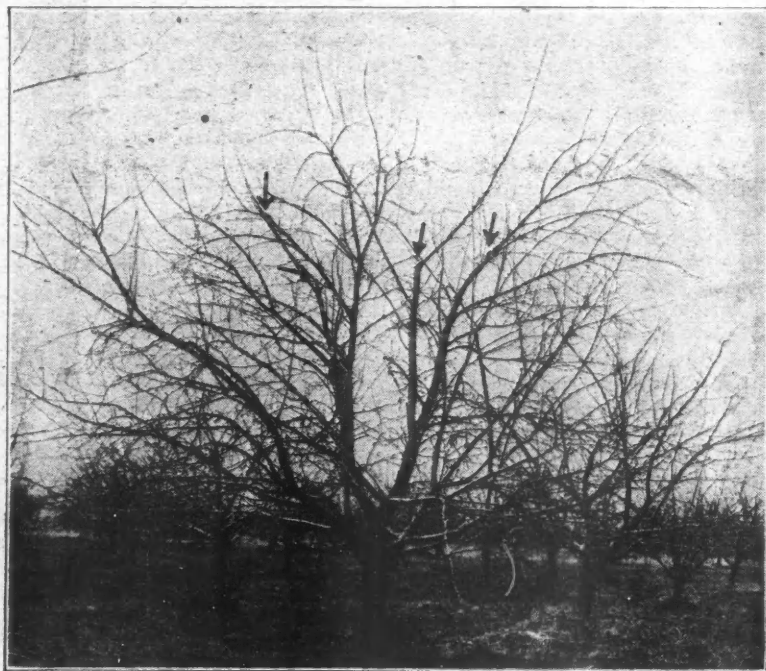


Fig. 3—Heading back the top should be a part of the pruning of the bearing tree. Such heading back (arrows) checks the stronger top branches and gives the weaker lower ones a better chance to grow and produce better fruit.

terminal buds than from spur buds. This difference may be more fancied than real, however, as a spur is merely a short branch. Although most apples are produced upon spurs, it is not true that the crop on a tree is directly related to the number of spurs blossoming, in fact, the reverse is more often true. A tree may blossom too heavily. It is well known that a "snowball" blossom is usually followed

branch growths of variable lengths upon one, two and three-year-old wood. The result is moderate blossoming, occurring in this way: Such a range of growth includes the so-called over-vegetative long shoots which do not form blossom buds; the under vegetative short shoots which are likewise unfruitful, as well as many growths usually moderately vegetative, which produce blossoms. The opposite con-

dition of spur growth is found in varieties which tend to bear biennially, as Wealthy, Transparent and York: Practically all of the spurs are of rather uniform size, Figure 1. The result of this "habit" of spur growth is that all or none of the spurs blossom, depending upon whether the tree is in or out of fruit. It is apparent from this difference in growth habits that two main pruning systems should be followed.

Trees with the habit of producing variable length spurs need only sufficient thinning out and heading back of the top to give the remaining branches room enough to develop naturally. This type of thinning out of the top also applies to the varieties which bear on terminals. It is, of course, necessary to keep the trees strongly vegetative by proper culture or only short spur growths will be produced.

The varieties which do not produce variable length spurs need the so-called detail pruning as in Figure 2, in addition to necessary thinning out of branch as for the other type of tree. Branches like Figure 1, at the left, become like that of Figure 2, left. Heading back as at A, Figure 2, should be done to keep up the production of good fruit. The local stimulus of this type of cutting back produces strong spur and shoot growths which give better fruit production and may even result

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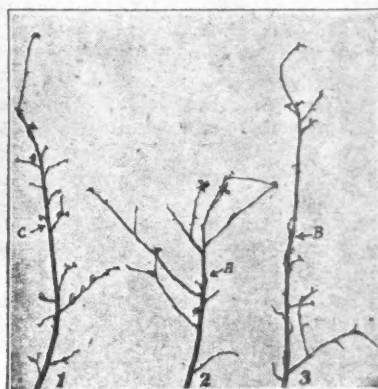


Fig. 2—Head back weaker branches to give better wood growth. Branches 1 and 3 are biennial, 1 being in and 3, out of fruiting. Note that all spurs are making short growths as Fig. 1, left. Cutting back at "A" gave strong growths of variable lengths and in this case regular bearing. Head branches 1 and 3 at about "C" and "B".

The Little Red Berry Did It

by J. M. Merrill

THERE is always room at the top. Ralph Eckles had read this somewhere and it set him to thinking. He lived with his parents on a barren 60-acre farm and managed by dint of close economy and hard work to get himself through the nearby village high school.

The Eckels were a hardy people, farmers always, and yet Josiah Eckels had made a sad failure wherever he had been. When he took up his present land he owned his first farm. Ralph and a sister younger, Miss Alice, constituted the family.

The best farming lands were too high in price for Josiah to think of purchasing, consequently he contented himself with a cutover 60, on which he built a house, barn and a few necessary outbuildings. One pony team did the work and the Eckels lived after a fashion. Had they been south they would have been denominated "white trash." As it was, Ralph realized that his father was not considered a first class farmer.

"There's a screw loose somewhere," said he to his sister Alice one day. "Here we have lived on this place ever since I was a kid and what have

we got to show for it? Pa says the farm is all paid for, but I have to quit school because there's no money to send me away to the city school."

"Did you wish to go further, Ralph?" asked Alice, with her appreciative smile. "You told me once, after the twelfth grade, you would be satisfied."

"I meant with father's help, of course. Now, a boy almost 17 ought to be able to earn something for himself. I shall cut out school and start to earn my own living, but it can't be done here on this miserable 60 acres. I can tell you that."

The boy had been reading catalogues and all sorts of bulletins about farming, gardening and fruit growing. Of a sudden he conceived an idea which he carried to his father one day after he had spent his last day at the village high school.

"Something troubling you, Ralph?" asked the farmer, whose grizzled countenance showed signs of great discouragement.

"Yes, father, there is," admitted the boy. "Things aren't going right on

this place. I hate to go away and work, leaving you to manage alone. I simply can't do that. You have had a hard life of it here. I am young and husky and my place is with you till we get the place into better trim. Something is wrong or we wouldn't remain so poor all these years."

"Of course. It's the poor land we are working. If I could sell and buy a better piece I'd feel more like working."

"Father, I believe this farm is all right," declared Ralph, "but we haven't worked it right. I have been reading a lot of things during the last year. I've got sufficient schooling for the present, and I am going to turn my whole attention to farming, and— and fruit growing."

"And what?" cried Mr. Eckels. "Fruit growing, father. I read of men making an independent fortune at it. Why, a Mr. Selwyn down near Grand Rapids, netted \$10,000 from one apple orchard last year."

"All very well, but he had the land to back it up."

"Listen, father. Our land isn't the best in the world, nor is it the poorest. With your permission I am going to experiment."

"Oh, well, of course you can do what you like, my boy, but you must remember that this sandy land isn't adapted to fruit."

"I think it is. There's that 2 acres of hog pasture. That has been just a pasture for swine for several years. Why not turn them into another field? If you will let me have that 2 acres for my very own I'll try an experiment. Will you do it, father?"

There was an eagerness in the boy's demeanor that quite surprised the farmer. He had never seen his son so in earnest about anything, not even his studies, before, and it puzzled him.

"If I let you have that hog pasture you will stay on the farm?"

"That I will, and see if I can't make something of myself even on this land you so despise."

"What will you do with the land, Ralph?"

The boy pulled a pamphlet from his pocket and opened it, showing

(Concluded on page 29.)

Our Editorial Comment

Pruning

WE ARE planning to run a series of pruning articles during the winter. We hope you read in our November issue the article by Prof. R. H. Roberts, of the University of Wisconsin, entitled, "Prune the Young Tree." We want you also to be sure to read this month the article by the same author, entitled, "Prune the Bearing Tree for Better Fruit." Prof. Roberts is recognized today as one of the best experts on pruning in the middle west.

The article this month by Prof. Warren P. Tufts, of the Farm School at Davis, Calif., entitled, "A New Departure in Pear Pruning," should be very interesting to all pear growers and, in addition, should be of general interest to all classes of fruit growers as perhaps it opens up a new method of handling trees. The article by Profs. Gordon G. Brown and Leroy Childs, of the Hood River Experiment Station, entitled, "Pruning and Fertilizing the D'Anjou Pear," also contains many interesting pruning notes.

We shall during the winter continue our series on pruning. Some of the very best experts in America have promised to write articles for us, and there is no subject which is of more interest to growers than pruning. Great changes have taken place, especially in the pruning of young trees, during the past few years. We have passed from the period of excessive heavy pruning to one in which young trees are given practically no pruning. We have passed from one extreme to the other. On the Pacific Coast, especially in California, we have seen the development of the so-called "long" pruning taking the place of the very excessive cutting which had formerly been practiced in that state. Pruning undoubtedly has been overdone in California. The coming of the long system of pruning, however, may bring up some problems as to the future treatment of trees, the size of fruit, thinning, etc.

We believe that most of our readers will be safer if they follow a middle-of-the-road course and do not practice extremely heavy pruning on the one hand; neither should they abandon pruning on the other. Possibly moderate pruning might reduce the amount of fruit borne the first year or two that the tree bears; however, that is questionable, as shown by Prof. Roberts last month. There is a question, too, that the trees might not bear more fruit in subsequent years if given moderate pruning.

The tendency to not prune young trees is being carried over to the bearing orchards. A very large percentage of our bearing orchards are now beginning to produce their fruit on the outside and tops of the trees. Little fruit is being borne in the inside of the tree. Laterals which were once strong are rapidly dying out. Much of the fruit produced is small, poorly colored and badly attacked by fungus diseases. Buds and spurs are dying except on the outside of our trees. Such a condition could be changed by moderate pruning well distributed over the trees. Air and light must circulate through the trees if the fruit crop is to be well distributed. By opening up the head and allowing the sunlight to get into the center of the tree, the development of fruit spurs will be encouraged and the fruit will be better colored. There also seems to be some correlation, with some varieties of fruit at least, between the length and type of the wood produced and the amount of fruit grown.

While it is very desirable to grow a very large amount of fruit per tree, it is even more desirable that this fruit be high-class. We know you will enjoy our pruning series this winter.

In Days of Yore

THOSE men who were raised on a general farm in the east, especially those having fine home orchards, have fond memories of the apple feasts. Early in the evening one of the boys was sent to the fruit cellar or storage house to bring in a heaping milk pan of fine apples. The mother of the family gathered with her group around the fireplace and peeled apples as long as any could be eaten. At times there was the cider mug. Sometimes the cider was heated and popcorn was eaten with the cider. We started eating apples in the early fall and we had apples until April. There was the Snow, the Fall or Holland Pippin, the King, the Jonathan, Baldwin, None-Such, Seek-No-Further and, finally, the old mealy Russet. After eating all the apples we could hold, we generally drank a glass of water and went off to bed. The general health of the family proved the adage that, "An apple a day is health's best way."

There was another custom in connection with this apple eating which was wholesome and which could be well adopted today, and that was the custom of having some member of the family read something entertaining and instructive aloud to the entire group.

In addition to the apples, there were the Bartlett and Clapp's Favorite pears which we gathered carefully and wrapped each in a piece of paper and tucked away in a deep drawer until it became mellow, yellow and juicy. And there were the great plates of Seckel pears, of Concord grapes—what a delightful breakfast combination. In addition, we ate great quantities of baked apples. These were generally cored and frequently the hole so formed was filled with molasses or syrup, which later oozed out, making a delightful jelly. Often we boys ate five or more of these in bowls of milk. Occasionally we were fortunate in having cream and ate them for breakfast. And there were the pears which were peeled, quartered and cored and baked in syrup in crocks in the oven—a dish fit for the gods. Why even such poor eating pears as the Vicar of Winkfield, the Clairgeau and the P. Barry are delightful if prepared in this way and eaten with cream or in bowls of milk!

Yet children of today like fruit as well as we did but how many kiddies in the larger towns and cities get a real chance? How many families in homes—not those in apartments where there is no storage, but those in real homes in suburban towns—buy apples by the basket, box or barrel, or even buy them freely in large broken lots? Perhaps that is one phase of our apple marketing that we have forgotten—entirely overlooked. People want to eat apples and will eat them liberally if we will give them the right kind of opportunity. It will need a program of education, a campaign which inaugurates new methods of education, publicity and advertising. These are sorely needed. If we can reinaugurate the old custom of fruit eating at night, it would solve most of our marketing problems.

Our Winter Program

IN ADDITION to the splendid series of pruning articles which our readers are to enjoy this winter, we are also going to give you other good things. The February issue will be, as customary, our Annual Spray Issue. Last year many growers told us that our Spray Issue was by far the best issue ever published by any fruit paper in America. The spraying calendars this year will be brought strictly up-to-date and at this writing, some of America's foremost experts in the control of insects and diseases are preparing articles which will be very profitable to you.

We realized that many of our growers keep

a few bees and nearly all raise some chickens. We could not in a fruit paper go into these subjects as extensively as we desired. There are, however, special publications that are most excellent which specialize on these subjects. We did feel, however, that a small amount of space each month during the winter would be greatly appreciated by our readers. We therefore were very fortunate in securing Prof. H. F. Wilson, of the University of Wisconsin, to prepare a series for us on the handling of bees. Prof. Wilson has been devoting his life to bee study and is considered today one of the best experts in America. He is a man of a decidedly practical turn of mind and we know our readers will greatly enjoy his articles.

It is only natural that we should go to the great state of Iowa to have a series of poultry articles written. Iowa claims to be the leading poultry state in the Union and we have been fortunate in securing the services of Prof. H. A. Bittenbender, of the Iowa College of Agriculture at Ames, to prepare for each issue during the winter a short article on some phase of the poultry business.

We shall maintain our regular departments. We are also collecting a most excellent series of general articles which will interest our readers. We are ever striving to make the American Fruit Grower Magazine a dependable magazine for dependable growers.

Our Independence

MEN LIVING today can remember when most of our prunes were imported from France and Turkey in huge casks, and practically all our walnuts came from France; when Italy furnished us a large share of our filberts, oranges and lemons; when Spain was called upon to furnish oranges, lemons and nearly all our winter table grapes, and practically all our currants came from Greece; when the Mediterranean countries sent us our raisins, figs and dates. Today we are practically independent of these countries and are not only producing all of these commodities that we ourselves consume, but are rapidly becoming the world's largest exporter of these fruits and nuts. A new industry in southern California, Arizona and New Mexico is springing up, namely, date culture, while in Florida the banana seems to have a bright future. With the production of these two fruits, we will be absolutely independent of the world as far as fruit is concerned. No other nation is able to grow so intensively and extensively such a wide variety of fruits and nuts as the United States.

Increasing Prosperity

ALL THE reports that we can receive indicate a growing prosperity in this country. The building boom continues. Bank clearings are large. The railroads are loading more freight cars than ever before in their history. The increased consumption of butter in this country last year was enormous. This is always an indication of prosperity. The mail order houses are reporting ever increasing sales. The United States Department of Agriculture and bankers in agricultural districts report a growing prosperity in the agricultural communities. Recent figures from the Department of Agriculture show that the farmers this year will receive over a billion and a quarter more dollars for their crops than they received a year ago, and there is very little unemployment in the country. People in the large centers of population are spending money freely. All these are signs of prosperity and we hope this situation continues to improve.

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A New Departure in Pear Pruning

by Warren P. Tufts
University of California



Fig. 1—Mr. Caldwell ready to "tie down" two-year-old Bartlett pear tree. Note the splendid growth of the past season.

ONE OF the most interesting features of Pacific Coast horticulture is the extent to which fruit growers have attempted to better their returns by individual experimentation. This, naturally, has only in a few cases been of immediate pecuniary benefit to the individual, but is, nevertheless, an index of the progressiveness and high mental caliber of the men engaged in the industry. The writer feels that it would be difficult to sit down and write out a modification of some particular standard orchard operation and then not be able to find a grower somewhere in California who had not already tried it. This is particularly true of pruning.

Caldwell System.

One of the most interesting variations of standard pruning practice is the so-called Caldwell System of Pear Pruning. Briefly stated, this system consists in the tying down of the upright one-year-old shoots to an angle somewhat below the horizontal. The resultant new growth arises just below the highest point of the bend. Practically all growth beyond this point is reproductive in character and rapidly develops a good fruit-spur system. This bending of new growth to promote fruitfulness is of special interest to the writer inasmuch as he inaugurated some experiments along somewhat the same lines in 1915 when

a member of the horticultural staff of the Oregon Agricultural College. A year or two later, Dr. H. S. Reed, of the Citrus Experiment Station at Riverside, Calif., started an investigation of the physiological aspects of the same problem. In principle, the Caldwell plan is very similar to the espalier-trained trees of European countries. In both cases, the bending of the branches seems to check the circulation and induce fruitfulness.

When W. A. Caldwell, a structural engineer by profession, started his pear orchard at some 3000 ft. elevation in El Dorado County, Calif., he was confronted at the end of the first summer with the problem of how the trees should be pruned. At that time it was the common practice in California to head pear trees at the first dormant pruning to three scaffolds and leave these 5 or 6 in. in length, even though the trees might have made a shoot growth of from 4 to 6 ft. This seemed to Mr. Caldwell a great waste, but since all his neighbors said it was the only thing to do, he pruned severely the first winter.

At the end of the second summer, from observations in other orchards, Mr. Caldwell decided to leave the trees unpruned and to tie down all new shoots to such a position that the tips would be somewhat below the horizontal. Figures 1 and 2 show rather clearly the method employed.

Common cotton twine was used and during the first few years the strings were run down to the trunk and tied. The tying down is generally done during the dormant season. After the shoots have been held in place during two or three months of the growing season the strings are cut and the branches hold the bend permanently.

Figure 3 shows the character of the resultant growth. It will be noticed that vigorous vegetative shoots arise at a point just below the bend. Figure 4 shows the mass of fruit wood developed at the distal end of the bent branch.

At each dormant period all the new shoots are tied down in such a way that there is as little shading as possible of the lower branches. This later tying is done to any convenient point, either trunk or lower branch. Mr. Caldwell's trees are now 10 years old and, with the exception of the first winter, have not been touched with the pruning shears. They are wonderful specimens for their age and the foothill conditions under which they were grown, in fact, there are few 10-year-old Bartlett pear orchards which exhibit an equal development.

It has repeatedly been shown by various workers during the past few years that the lighter young non-bearing trees are pruned the larger and stockier is the development. During the time the tree is bending all its



Fig. 3—Six-year-old Bartlett pear tree trained by the Caldwell method for two or three years. Note splendid development of new shoots at bend.

energies towards vegetative growth, severe dormant pruning not only removes accumulated plant food reserves, but also reduces the potential leaf area for at least the first part of the following growing season. When one remembers that leaf area is a most important factor in growth, the final result seems reasonable. So, also, in the case of where no pruning has been done, but abundant light has been admitted to all parts of the tree by tying down, splendid development has been the result. It is, of course, understood that soil moisture and mineral nutrient materials must be adequate.

By tying-down, the main framework branches are gradually built up and out at an upright angle in order to secure the greatest mechanical strength. A very flat branch has a restricted supporting strength and a perpendicular one gives little or no spread to the tree, thus limiting the fruiting area. The writer has seen eight packed boxes (50 lbs. per box) on a six-year-old tree trained by this method and only two props used, which were not altogether necessary.

Thinning Occasionally Necessary.

As the trees become older and the shade more dense some thinning of the wood is necessary to admit light

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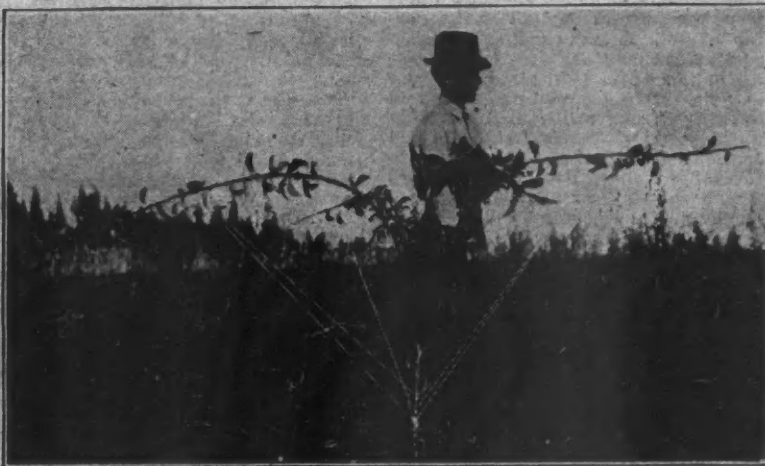


Fig. 2—Same tree as in Fig. 1 after "tying down." Note the twine used to hold limbs in place. These strings are cut after the branches become "set" but before any girdling effects are noticeable.

Winter Injury to Grapevines

by Arthur S. Rhoades
Missouri State Fruit Experiment Station

Immaturity of the Tissues.

LIKE fruit trees, grapevines often suffer from a greater or less killing of the fruit buds and other parts during the winter, which results in a more or less marked decrease in the yield the following year. The effect on the vines varies greatly and may comprise the death of more or less of the buds, either in their entirety or perhaps only of the embryonic flower clusters contained within them; the death of the immature wood at the end of the shoots; the killing of the larger parts of the vine or even of the whole vine back to the ground; or, rarely, the complete death of the whole vine.

The energies of the vine probably are devoted mainly to ripening the fruit as long as this remains immature on it, leaving the final maturing of the buds and canes to the comparatively short period which comes between the grape harvest and the cessation of growth by cold. With a large crop too little strength remains in the vine to properly mature the buds, and many are killed or changed in character by winter injury without general death of the canes.

The most important factor in winter injury to grapes undoubtedly is the immaturity of the tissues in the fall. When there is a marked shortening of the growing season as a result of unseasonably low temperature, the fruiting wood and buds go into the dormant season soft and sappy and not hardened sufficiently to withstand the low extremes of the winter. Likewise, unseasonably high temperature in the fall, especially if accompanied by heavy rainfall, promotes succulent growth and leads to immature wood and improperly ripened buds. A sudden drop in the temperature to the freezing point or below will be sure to result in the death of many of these immature parts. As a rule, however, the injury of the immature shoots is of but little or no consequence, since at least most of these shoots ordinarily would be

removed when the pruning is done.

Many other factors than maturity of wood and buds, however, may influence the degree of winter killing. Most perfect maturity may be followed by winter injury if warm and cold periods alternate too violently or too frequently. Thus severe injury may be caused if the cambium is stimulated to active growth by a period of unseasonably warm weather during the midst of the dormant season, say in January, and is followed by a severe drop in temperature. Such conditions are of rather frequent occurrence in the more southern states and often result in severe losses to the fruit crop. In any case, however, maturity undoubtedly serves as a protection in ordinary weather.

Winter Killing of Roots.

Winter killing of a very serious nature may occur when the roots have become injured. Contrary to what

would be expected, the winter is much harder on the roots than on the vines above ground. Oftentimes, especially in vineyards on high, exposed situations, the roots may be dead or badly injured when the vines and buds are uninjured. In this case the buds, while they may develop, cannot live, or only a portion can live if the roots are not too severely injured. Such injury does not become manifest until early summer, after the foliage has been put forth, when the leaves die quickly under the hot sun or dry weather conditions by reason of the failure of the roots. Where the roots have not been killed outright, good cultivation and fertilization early in the season is desirable to stimulate new root development. By reason of the time of the year at which the trouble becomes manifest most persons are likely to overlook winter conditions as the cause of this injury.

The injury resulting to the vines from the occurrence of late frosts in the spring, after the vines have begun their development, is of course

(Concluded on page 31.)

The Ancient Avocado Groves of Guatemala

by Earle W. Gage

MAN WAS in a high state of civilization in ancient Guatemala long before Columbus landed in America in 1492. And one of the dependable foods of the natives for the centuries has been the luscious, succulent avocados. Probably no country possesses such an abundance of fine fruit of this variety as Guatemala. Scattered throughout the highlands of the republic are many trees of unusual merit, from which were secured the original cuttings of the present growing avocado industry of California and Florida, which leaders of the American fruit industry advise will within a few years become commercially extensive comparable with the lemon and orange industries.

The Guatemalan avocados present a wide variation in characteristics. Fruits of some varieties are no larger than hens' eggs while others weigh 3 lbs. each. The shapes range from long and slender to oblate, the surface being rough, warty, sometimes smooth. The color ranges from green to maroon, purple and nearly black. Some varieties have exceptionally large seeds, others small. But most of the important varieties possess deep yellow flesh, of finest texture, with a rich, agreeable flavor.

Since the soil was cleared in the lower Motagua Valley for banana plantations—now thousands of acres in extent—the production of avocados is insignificant in comparison with that of bananas; but to the native Guatemalans, especially the Indians, who represent more than half the total population, the avocado is still in most regions the more important fruit. Bananas are produced with an aim of supplying the large demand from the United States, the entire avocado crop being consumed at home.

A Daily Food.

The abundance of avocados, their cheapness, and the long season during which they are available make it possible for even the poorest natives in all the principal avocado regions to use them as a daily article of food throughout more than half the year. An avocado, four to five small, round cakes of coarsely ground maize, and a cup of coffee comprise a good meal for a native, the total cost of which is about 2 cents, but which possesses a high nutritive food value. Therefore, the high cost of living is unknown in the hilly vastness of

Guatemala because of the avocado groves.

The three races of avocados at present cultivated in the United States are all found in Guatemala, but the Guatemalan race is the only one which is common. The West Indian race is limited to the lowlands up to 2500 ft. in altitude, and even in this zone is much less abundant than the Guatemalan in the higher zone which it occupies, extending from 2500 ft., rarely lower, to 7500 ft. and even 8500 ft. above the sea level. The Mexican race of avocado is found only in the highlands and few trees are under cultivation. A distinct species of *Persea*, closely resembling the avocado and known as *coyo*, is as extensively grown in some sections of the country as the avocado itself.

Not Planted Commercially.

No orchards or regular plantations of avocados are found in Guatemala. The majority of the trees are grown singly or in small numbers around houses of the natives, though groups of from 50 to 200 may be found about the coffee plantations, being used as shade for the coffee plants. Avocado trees often spring up in the plantations from seeds cast aside, which demonstrates well the wonderful adaptability of both soil and climate of the country to this valuable fruit.

Antigua, the former capital of Guatemala, which lies about 25 miles from the present capital, is the center of one of the leading avocado regions, perhaps also one of the greatest in the world both for quality and quantity of fruit produced, though in quantity it soon will be outclassed by the avocado groves of California and Florida. This region lies in a beautiful valley, whose floor is about 5100 ft. above the sea. It is protected on the north, east and west by towering volcanoes and high hills, and to the south there is an opening toward the ocean which permits warm breezes to enter from the Pacific and keep the valley at a fairly equable temperature throughout the year. The soil is of volcanic origin—deep, friable, moist, and very fertile. Practically every foot of ground in the valley is planted to some agricultural or horticultural crop, coffee being the

leading commercial product, though maize and black beans are grown extensively. Beside avocados, there are oranges, cherimoyas, mobins or jocotes, guavas, loquats and peaches. During the first 6 months of the year large quantities of avocados are carried from the gardens and coffee fincas of Antigua to the markets of the city of Guatemala.

Important Avocado Sections.

Other important avocado growing sections are Panajachel, the great Vera Paz coffee district, Amatitlan, Momostenago, Senahu, Alta Vera Paz. These regions produce only the Guatemalan race of avocados. The West Indian race is found along the coast and up the valleys of the principal rivers to elevations of about 2500 ft.

In Guatemala nearly all the products of the soil are used in the simplest manner possible; therefore little ingenuity is exhibited in the methods of utilizing avocados. The Indians, who are the greatest consumers of avocados in the world, merely break the fruit in halves and sprinkle a little salt over it. Even the salt sometimes is dispensed with. The soft pulp—the Indians rarely eat the avocado until the flesh has lost its firmness—is then scooped out of the skin with the fingers or a bit of tortilla.

Among the Guatemalans of European blood the pulp of the avocado is very commonly added to meat soups at the time of serving. It is the custom in many hotels to place a ripe avocado in front of each guest, who opens the fruit, removes the pulp, and places it in his soup. The flavor imparted is exceedingly pleasant. This mode of serving the avocado seems worthy of adoption in the United States. Another common practice is to serve a salad called guacamol. This is composed of thoroughly mashed avocado pulp, vinegar, salt, pepper, and finely chopped onion. It is a popular and very tasty dish, though not especially attractive in appearance.

In certain sections of Guatemala, it is thought that the avocados are excellent food for laying hens, greatly stimulating the production of eggs. Hogs thrive on avocados. But to people of the United States, accustomed

to paying from 50 to 75 cents each for avocados, this practice would seem to be rather expensive pork production, but where inferior avocados can be purchased for 6 to 7 cents a hundred and lard is 25 cents a pound, it is a good investment to convert avocados into pork.

In Guatemala, as in Mexico and some other parts of tropical America, three climatic zones are generally recognized. These are the tierra caliente or hot region, extending from sea level to an altitude of about 2000 ft.; the tierra templada, or temperate region, comprising the territory between 2000 and 6500 ft.; and the tierra fria, or cold region, which extends from 6500 ft. to the upper limit of cultivation, about 10,000 ft.

Several Groups of Varieties.

The classification of avocado varieties has been the object of much investigation in California and Florida during the last few years. As with other cultivated fruits, it has been found that the horticultural varieties fall into several distinct groups. Three of these, termed generally the Guatemalan, West Indian and Mexican, are now recognized by investigators.

Wilson Popenoe, agricultural explorer, office of Foreign Seed and Plant Introduction, Department of Agriculture, recently toured Guatemala, not only in search of superior varieties, but also for the purpose of classifying the various varieties. He reports that "A canvass of the avocado-producing regions of Guatemala has failed to bring to light any new groups, the investigations tending only to confirm the classification already in use in the United States. Mexico, with its vastly greater area of territory, may perhaps yield groups as yet unknown to horticulturists, but no critical study of the avocados of that country has yet been undertaken."

"Perhaps the horticultural groups have been derived from distinct species of *Persea*," continues Dr. Popenoe. "If not, they have at least become differentiated through the accumulation of variations during a long period of cultivation under different environmental conditions. In order to determine their exact status it becomes highly desirable to locate the wild prototype of each, if such a wild prototype still exists. This has

(Concluded on page 24.)



1—An avocado tree in a coffee plantation. 2—An avocado tree thriving 8500 ft. above sea level, upper limit of culture. 3—The Nimalik avocado, a productive and large, luscious fruit.

Even as a Grain of Mustard Seed—

Long ago it was written that faith, even tho small as a grain of mustard seed, could remove mountains.

Henry Ford, with unbounded confidence, has labored for more than twenty years to remove the mountain of difficulty standing in the way of modern transportation. He has sought always to give the world practical transportation at low cost. Many have wondered why Ford products, whose remarkable value time and use have proved, can be produced, sold and serviced for so little.

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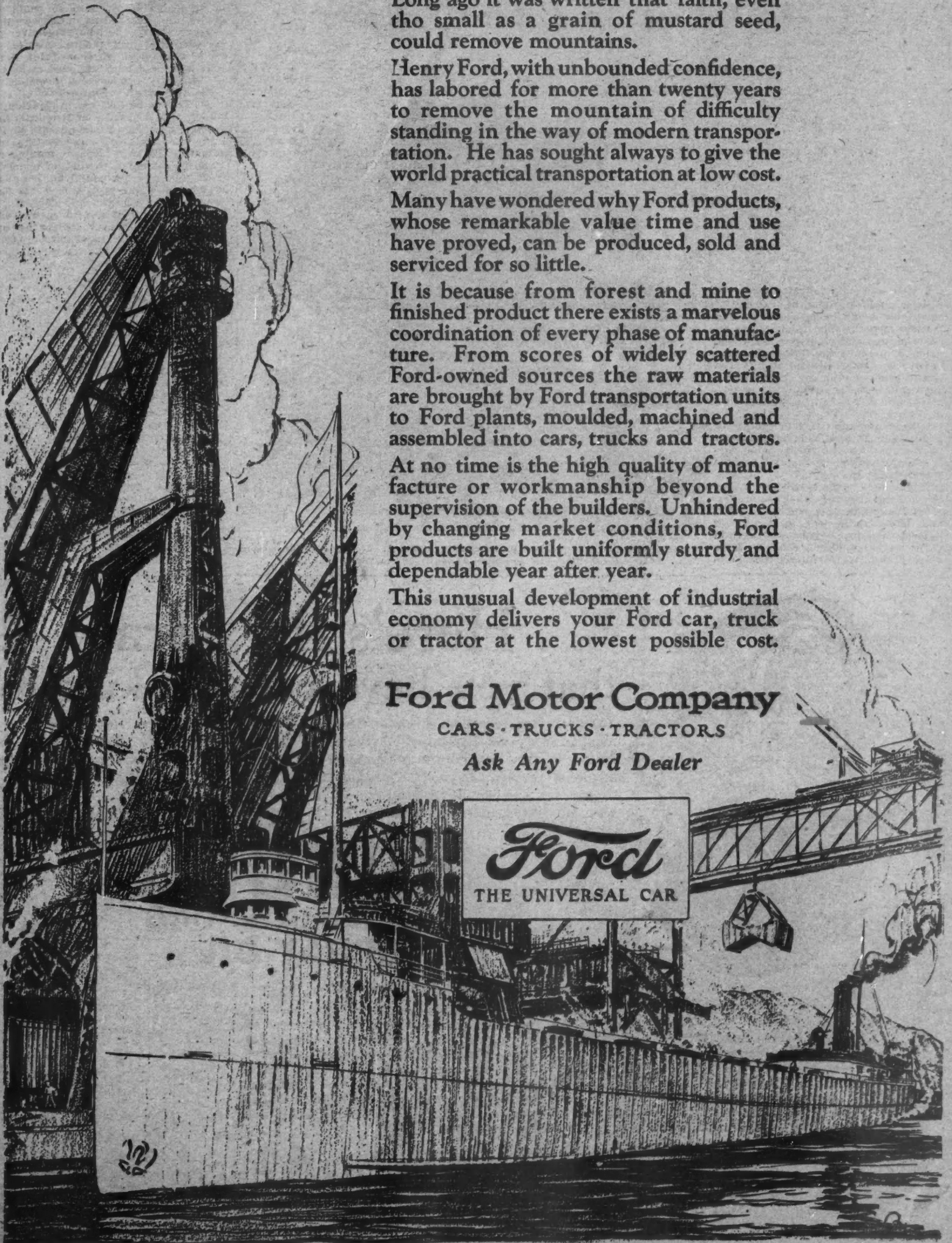
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UNLOADING ORE AT THE RIVER ROUGE FORD PLANT

Pecan Growing Is Promising

by P. O. Davis

AN IMPORTANT and permanent place in the agriculture of Dallas county, in central Alabama, is being rapidly established by pecans. As an industry, pecan growing in this county has already established itself with many and is growing by leaps and bounds. One farmer, J. E. Dunaway of Orrville, who was one of the pioneer pecan boosters of the county, is preparing to set 6000 pecan trees on 400 acres next winter, and he is only one of many who will make plantings, ranging from a few to several thousand trees.

The development of the pecan industry in Dallas county is one of the interesting events in southern agriculture. For more than a half century it has been known by a few that natural conditions were favorable to pecans, but in spite of this, Dallas continued to hold its place at the top of the list of Alabama counties in the production of cotton until boll weevils made a different type of farming necessary.

Is Young Industry.

Several years prior to the arrival of boll weevils, about a dozen leading farmers of the county became interested in pecans and planted a few trees. From time to time these plantings have been enlarged and during the last few years many new pecan groves have been started. It is estimated that several thousand acres are in bearing trees.

Being a comparatively new industry many facts are still unknown about pecans, but, on the other hand, several fundamental facts have become established.

In the first place it is known that Success is decidedly the leading variety for this section and that Stuart and Pabst rank next in the order named. Schley, Delmas and certain other varieties either scab or have other prohibitive features. It is prob-

able, however, that other good varieties will be either introduced or developed in this section, and varieties that are objectionable here may be very satisfactory under other soil and climatic conditions.



A pecan tree that has reached its hundredth birthday. It is a seedling, resembling the Schley, and produces annually 300 to 700 lbs. of nuts.

Require Much Space.

Another established fact about pecans is that they should have plenty of space. Trees in some of the old groves were planted as close together as 40 ft., but experience has already revealed that they should be at least 60 ft. each way. It is probable that time will reveal that greater distance is necessary because the pecan is a large and long growing tree. An old tree, said to be 100 years old, owned by Dr. J. N. Furniss of Cahaba, Dallas county, now has a spread of 100 ft. and is 90 ft. high. Incidentally, it produces annually 300 to 700 lbs. of nuts very similar to the Schley. In 1922 this tree yielded over 500 lbs., which netted the grower 35 cents per pound.

The requirements of pecan trees during the first several years appear to be very similar to general orchard requirements. If allowed to mature, small grain crops are very injurious to young pecan trees, but, on the other hand, crops of legumes which are turned under are very beneficial. Young pecan trees need cultivation and many young groves are helped by cultivating cotton and other crops, especially legumes, between the rows. For growth and the production of nuts, pecan trees must be properly fed.

Only Few Pests.

To date, scab is the only disease of a serious nature which has developed, and it is confined to certain varieties which are being discarded. Minor injury is done by a few insects which are not expected to become serious.

With the exception of variety selection, very little has been done in regard to insect and disease control by Dallas county farmers. It is well known that the spraying of trees 50 or 60 ft. in height is a very difficult task. (Concluded on page 30.)



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Here is a new and wonderful product which is effective, easily mixed, convenient to handle and economical to use. Follow directions and you are sure of results. Send the coupon attached and get full information.

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For aphids, red spider, thrips, young scale, etc., on apple, pear, shade trees and evergreens use one part of Sunoco to 50 parts of water or Bordeaux mixture. Sunoco emulsions resist severe weather and the washing action of rain. Sunoco with one part to 150 or 200 parts of Bordeaux mixture or nicotine solutions (with or without lead arsenate), will act as a remarkable sticker and spreader.

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For December, 1923

Prune the Bearing Tree for Better Fruit

(Continued from page 5.)

in enough variable length growth to give regular bearing. It is necessary to make the cuts small. Large cuts, as in removing a large branch, have little effect upon the run-out wood on the remaining large branches.

Heading Back the Top.

Another pruning operation to be considered is that of heading back the top, Figure 3. While this is desirable from the standpoint of lowering the tree to aid the spraying and harvesting operations and to admit light into the top, heading back has another very important function: It aids in keeping the treetop in balance and so uniformly vegetative. The common trouble with apple trees is that the central main branches have outgrown and more or less dwarfed the lower branches. That is, it is not shade alone which has given the usual weak wood about the bottom of an apple—it is frequently due to a too strongly growing center of the treetops. Heading back is a way to overcome this trouble and to balance up the main branches of the tree. Cutting the strong top branches gives the weaker lower ones a better chance to grow.

It is frequently objected that heading back produces many suckers. It may do this if the cuts are improperly made. Heading back does not usually result in much suckering if the cuts are made close to relatively large lateral branches. Cutting a large limb back to small branches or spurs will give much new shoot growth.

Heading back must be done with caution in localities where sun scald may occur and with varieties which are subject to this trouble. Opening out the top by branch removal may be the only practical treatment under such circumstances.

Rule for Pruning.

A rule for pruning bearing trees might be as follows: Observe where the best apples grow. Cut away the weak wood which bears small apples or only blossoms and does not bear at all. Prune the trees so as to produce only the type of wood which produces the best apples.

It is frequently advisable to do a little pruning in the late fall before the foliage is off the trees. The weak run-out wood is easily seen then. Also the amount to thin the top can be told at that time. A few trees pruned in the fall serve as a sample of how open to have the trees, a fact which is hard to determine after the foliage has fallen.

It might be argued that the type of small-cut pruning recommended is too expensive. Practical trial of this system shows that it is not much more expensive than to prune by larger cuts. It has been demonstrated that this type of pruning on old bearing trees is worth much more than it costs because of the increased size and uniformity of fruit secured and the much better quality of the crop. It also saves thinning expense. When used with proper cultural methods to give sufficient growth, it has given repeated production with such biennially bearing varieties as Wealthy, Duchess, Transparent and Benoni.

Cover the Strawberries

AS SOON as the ground is frozen, the strawberry bed should be given some protection. Probably the ideal protector is good, clean straw. The straw will mat down in the spring and the plants will come up through it nicely. It gives sufficient protection in the winter and does not furnish weed seeds. Hay will furnish more or less weed seeds, while leaves at times mat down the plants too much; but a light covering of some kind should be provided to prevent the frequent freezing and thawing in the winter, which will heave out the crowns and expose them to freezing weather, which results in many plants being killed.

CLOSED CAR COMFORT

Equipped with a heater of exceptional capacity, and with doors and windows snugly weather-stripped, the Business Sedan is invitingly warm on the coldest days.

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If you've been trying to get along with a cheap outfit, or a rig too small for your requirements, begin right by replacing your sprayer with an up-to-date Bean in a size large enough to do rapid, thoro work. You'll find it a big economy in the end.

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A first-class Bean outfit will enable you to get over your trees quickly and thoroughly—putting the material on when it does the most good—and doing the most effective work possible. You'll get MORE fruit and BETTER fruit—and you can count your added profit in real dollars at the end of the season.

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You make a double profit with a Bean. You not only get better work and more complete pest control—but it costs you less. Forty years of experience insure the utmost dependability. A Bean keeps right on the job hour after hour and day after day until your spraying is finished. No costly delays. You give all your attention to the spraying—the sprayer takes care of itself.

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Besides—the low maintenance cost and long life of a Bean outfit adds further economy. Bean's forty years of experience have developed not only dependability but durability. Some of the first Bean outfits built are still on the job. All the working parts are interchangeable—and when, after long wear, new parts are needed they can be quickly, cheaply and easily replaced by the operator himself. Don't put off your purchase of a Bean till next season—go in for these added profits now.

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Capacity of 5½ gallons per minute at 250 pounds pressure. Completely equipped. Furnished with or without truck.



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Combination orchard and truck sprayer. A very popular outfit. Write for full description.



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A real high-pressure barrel pump. Has large air chamber. Ball valves. Porcelain-lined cylinders.



Bean Power Dusters

We make a full line of power dusters, featuring uniform flow of dust and rapid, thoro, economical work. Ask about them.



Bean "Magic"

Operates with one-third the labor. A real high-pressure hand pump. Simple, sturdy, dependable. Porcelain lined cylinder and many other features.

Pruning and Fertilizing the D'Anjou Pear

(Continued from page 3.)

After two years of observation, it is observed that unpruned trees averaged approximately an inch larger in circumference than summer pruned, and three-quarters of an inch larger than the winter pruned trees. Terminal growth on all blocks has thus far been good. Differences during 1922 were not marked, averages ranging around 16 in. to 19 in. Growth for 1923 appears to favor winter pruning, but total aggregate growth favors no pruning. The crop produced in 1923 was heavier on the unpruned trees, the average being approximately two and one-half boxes per tree as compared with one box for trees summer pruned and three-fourths of a box for those winter pruned.

During the 1922 season the branches on a number of D'Anjous were spread as a part of the above experiment. Limbs were pulled down until they assumed a nearly horizontal position. The use of short boards to insure a proper spread was employed, the aim being to afford an abundance of sunlight to all portions of the tree. These trees received light winter pruning up to, but not including, the spring of 1923. These

nitrogen was apparent. Irrigation was first employed in 1913 and a 3-lb. application of nitrate of soda per tree was made just following a heavy bloom. Nitrate was applied comparatively late for best results, but marked improvement in growth and color of leaves occurred that year. The yield averaged around four packed boxes, some trees doing much better than others. Pruning up to and including 1918 was very light. Accumulated growth was dense and the spread of branches practically occupied all available space. Vetch as a cover crop was employed in 1919 and a portion seeded to alfalfa in 1920.

Beginning with the early spring of 1920, and annually thereafter, an experiment with commercial fertilizers in the alfalfa block has been conducted. Nitrate of soda, 3 lbs. per tree, superphosphate, 6 lbs. and sulphate of potash, 3 lbs., alone or in combination, were used.

Briefly, results previous to 1922 were practically negative. Despite heavy blossoming, yields were extremely small. The unfertilized check averaged only .69 and .79 boxes per tree for 1920 and 1921. Even the nitrate block shows only .60 and 1.06 boxes.

Fortunately a clue was gained in the 1921 crop indicating one cause of such low yields. Outside of the fer-



Methods used in bending D'Anjou limbs. Trees in background show normal position before coming into bearing.

trees averaged approximately one and three-quarters boxes per tree.

The results of the above observation, though far from complete, suggest the advisability of light pruning in the way of thinning out in the case of trees of this age. The aim should be to secure a strong frame-work and permit sunlight to all portions of the tree. The non-pruned trees were quite thick and bushy, and a bulk of the fruit was borne on outer portions and not in the best position, as was the case on trees thinned out.

Because of the fact that the D'Anjou is naturally an extremely vigorous tree during its younger period of growth, unfruitfulness may be due to an excess of both nitrates and carbohydrates as indicated in principle number two previously cited. This condition usually prevailing, it seems advisable to use fertilizers with caution.

Investigational Work in Older Orchard.

The investigation in the case of older trees is being carried on in an orchard now 15 years of age. The trees are set 20 ft. on the hexagonal. Clean cultivation without irrigation or fertilization was practiced in this orchard up to the tenth year. Fair crops were borne when the trees were seven and eight years old. Obviously a crowded condition was not created as yet despite the fact that trees were large. Owing to the cultural practices previously employed, growth was very light during 1917; small yellow leaves developed and some "dieback" existed. The lack of

tilizer experiment, five trees were moderately heavy thinned and headed during late spring just before blossoming. These trees had 3 lbs. nitrate each. Yields on these trees averaged five boxes per tree.

It is also worth noting that throughout the orchard there were conspicuous examples of trees bearing good crops. In some cases eight to ten boxes were secured. Some trees repeated the performance in a measure during the following year. Associated with this performance was the fact that such trees were usually favorably located with reference to light being close to young replanted trees.

A study of the above factors induced the owners to practice extremely heavy pruning during early spring of 1922. Trees in the fertilizer experiment were thinned and headed. Another block in the orchard was similarly pruned and another thinned only. Other trees were not pruned. Results that year were encouraging. The plots receiving nitrate alone or in combination gave as high as 12.5 boxes per tree. Even the check gave nine boxes. The influence of potash and phosphoric acid fertilizers was negative, either in quality, size of yield.

The writers suggest that the influence of such heavy pruning and fertilization very greatly changed the character of the trees. Under the crowded conditions previously existing there has been a reduction in nitrates and an accumulation of carbohydrates making for a suppression of vegetation and fruitfulness. The favorable influence of abundant light

irrigation and a 3-lb. soda per acre, giving a heavy yield compared with results, but growth and that year, round four doing much thing up to very light dense and actually co- Vetch as a in 1919 and in 1920. y spring of ter, an ex- fertilizers en conduct- s. per tree, d sulphate in combi- to 1922 s. Despite were ex- sized check boxes per ven the 10 and 1.00 gained in e cause of of the fer-

permitted by pruning appears to be outstanding. Pruning and fertilization for both fertilized and unfertilized trees on the other hand reduced the carbohydrate supply, causing it to be in proper proportion to the increased supply of nitrates.

Limiting Factors.

Evidently the limiting factors in this orchard were close planting, restricted root area, lack of sunlight throughout the tree and an inadequate supply of nitrates. The writers suggest that lack of sunlight and an over-supply of weak fruit spurs were principal factors resulting in low yields even on trees receiving nitrate of soda. Otherwise unfertilized and unpruned check trees which for two years yielded only about three-fourths of a box could not reasonably be expected to produce nine boxes each as was true following heavy pruning in 1922, nor could unpruned D'Anjous in various open spaces in the orchard yield 13.8 boxes each under the influence of nitrate of soda alone. In this connection we reiterate the fact that unpruned, densely shaded D'Anjous in 1922 (the heavy year) even though fertilized, averaged 5.9 boxes each.

The question of thinning versus thinning and heading trees under these conditions is important. Heavily thinned and headed trees for 1922 averaged 12 boxes each versus nine for those thinned only. The writers believe that comparatively differences are due largely to a more unfavorable condition of sunlight than that which obtained in cases of trees more severely pruned.

A better balance of plant foods in all parts of the tree resulted from heavy heading. During the past winter pruning in all blocks consisted in thinning out water sprouts and removing excess wood. A reversal in yields resulted in 1923, the heavily headed block averaging about four and one-half boxes as compared with an eight-box average on the non-headed trees, giving a two-year average approximately the same. In the case of the non-headed trees a greater leaf surface was preserved for further food production while in the case of the non-headed trees the heavy crop produced prevented much vegetative expansion, reducing food formation proportionately.

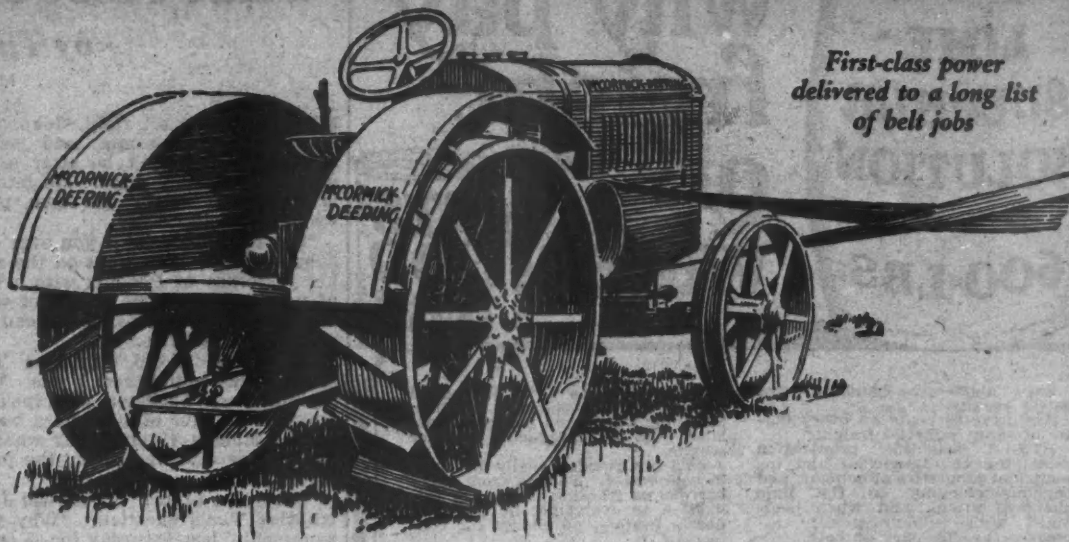
It is a common belief among D'Anjou growers that heavy pruning is necessary to insure heavy yields. It would appear that heavy yields can result during the year following such treatment, but that the heavy fruitfulness following tends to devitalize the tree and prevent a heavy set of fruit on the following year. Continued heavy pruning cannot be practiced because normal tree growth will not warrant such treatment. A devitalized condition and a restricted fruit area would be the obvious result.

As opposed to our stimulation of young D'Anjou trees, bearing trees of mature age require moderate to heavy fertilization. This means cover crops, adequate cultivation and the supplementary use of nitrogen fertilizers.

The writer's observations indicate clearly that the D'Anjou needs plenty of room in the orchard. Sunlight is absolutely essential to permit regular bearing. Heavy yields, coupled with the fact that the tree naturally becomes of large size, makes it necessary that the tree can spread, exposing the various parts to proper sunlight.

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IF YOU have quantities of cider that you plan to manufacture into vinegar, it is essential that this cider be kept warm and not allowed to get colder than 50 degrees. It is practically impossible to make good high-grade vinegar out under an apple tree or in an open shed. Where there is a basement under the house and a furnace is used, often a corner of such a basement is ideal for vinegar manufacture as the temperature is apt to be about right. If such a place cannot be secured, then the best protected room in the storehouse should be provided.



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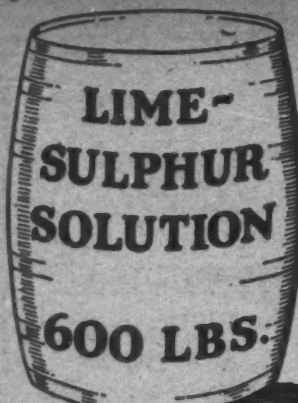
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You can now suit your ideas of price and get the famous Hayes "Fruit-Fog" Sprayers in sizes 3½ to 16 gal. per minute capacity, with or without trucks, engines, or equipment. The smallest Hayes Sprayers have the same high pressure, long life, and corrosion proof pumps as the largest.

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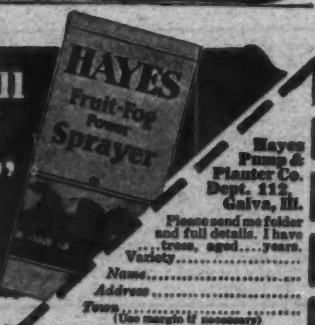
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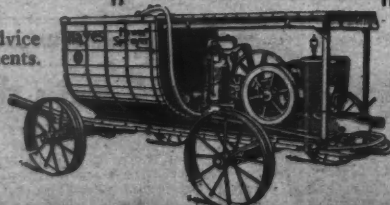
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You can get any size Hayes "Fruit-Fog" Sprayer without equipment if you wish—and get "Fruit-Fog" results at minimum cost. What you lack we will furnish at rock bottom prices consistent with Hayes quality.

Hayes 1003 (Below)—A 150-gallon sprayer which has made a nation-wide reputation. Send for folder, which gives complete description.



That Association of Yours

by Tim and John

More Sellin'.

IT'S interistin' all right, John, that matter iv salesmin and sellin' f. o. b. but ye don't be after sayin' nawthin' regardin' price. Me interist is strong in settin' me own price when I'm sellin'.

"But I'm wonderin' if you ever do," John replied. "You went on the market yesterday at Phoenix with a load of potatoes. Tell me all about what happened Tim and maybe we can see who sets the price."

"Sure and I did," bristled Tim. "And it waz sellin' them I was. Wan shrivelled up huckster waz insultin' me with an offer of 40 cents a bushel but be jabbers 45 cints waz what he paid. Now who waz settin' the price, me or him?"

"Forty-five cents?" questioned John, ignoring Tim's question. "Why they were sellin' last Saturday for 65 cents."

"They was," agreed Tim rather ruefully. "It waz me that waz hopin' they'd be bringin' 70 or 75 cents. And I had company in me hopes, too, if the number of loads on the market waz anny indecayshun. Sure potatoes met yer alye on ivry load."

"Now you've said who really set the price—the law of supply and demand. If you'd been settin' the price Tim it would have been 70 cents. It's true you didn't let that huckster get yours for 40 cents, but it wasn't just because you wanted 45 cents that you got it. If there'd been enough potatoes so that the market had gone to 35 or 40 cents, you could have talked all day for 45 cents but you wouldn't have got it. That's how much you have to say about the price."

"And phwat wud yez be doin' regardin' regulatin' iv prices?" questioned Tim fiercely.

"I've got it figured out this way—supply and demand are workin' all the time like them old-fashioned pair of balances Susie weighs out butter on. On one side of the balance is supply—the crop of apples in Western New York, for instance; on the other side are the buyers—or demand."

"And it's figurin' ye are the more apples yez be puttin' on thim balances, lower the price waz droppin'," said Tim, taking up the argument quickly and defiantly. "Then be jabbers it's pullin' some of thim off'n thim balances we'd better be doin' and lettin' thim rot forninst our orchards."

"What's the use, Tim?—You let yours rot to make the market better, and I sell mine. No, that thing can't be controlled except by organization."

"Is that what yer Association is hopin' to do whin it's big enough?" asked Tim, suspiciously.

"No, indeed," was John's emphatic reply. "But we can do two things in our Association that you outside and workin' alone can't do. Both of them make it possible for us to have more to say about price than just bargainin' with a buyer. The first is that we can control supply by shippin' steady throughout the season instead of dumpin' them all on the market in the fall."

"Yis, and can't I be puttin' moine in storage the same?" challenged Tim.

"Sure, and when you take 'em out, maybe everyone else is too, just like them potatoes. Don't make no difference Tim when the supply side of them balances is overloaded; just as bad in January or April as in October. It takes a big volume of apples goin' through one organization to keep supply steady. That's why I say we in the Association have more influence on supply than you workin' alone. That's one reason why we have more to say about the price than you do."

"And is there annything else ye can be doin' to be havin' the more to say regardin' price?"

"We can put more buyers onto the other side of the scales. Instead of havin' only Schwartz and the few cash buyers that come in here each

fail, we put all the buyers all over the eastern United States on them balances. The buyers in the towns that wants the fruit the most, judgin' by the prices they're willin' to pay for it, is the ones that gets the fruit."

"But how do yez be ather knowin' phwat ye can be askin' iv all thim buyers and manny iv thim cities 1000 or 1500 miles off?"

"Ask 'em all the same price. That salesman up to the Central writes or telegraphs to all them salesmen, tellin' them a price to sell at. It's the same price to everyone."

"Hivins, it's a wizard at figurs he is to be knowin' the price to tell thim."

"Well, he does have to know his job, but he ain't no more wizard than you on the Phoenix market sellin' potatoes. Don't make much difference what price he asks, if it's too high and his salesmen can't sell, he don't get no orders, and he has to lower his price. If he's too low he gets flooded with orders. Then he telegraphs right back refusin' the orders and raisin' the price. The only difference between him and you is that instead of backin' his wagon up to the curb in Phoenix he's puttin' 'Cataract' on sale in all the markets. Old Supply and Demand meet right there in that Central Office. They set the price, the salesmen doesn't. We put a nation-wide demand on them scales instead of a local demand. That's the other reason we have more to say about the price'n you do outside."

"Uh-huh," was all Tim could say for he was thinking.

"Faith, John," continued Tim in a more serious tone. "And phwy do yer association have thim salesmin at all? Phwy don't yez be sellin' roight to thim buyers and savin' the expinse?"

"In the first place we sell more 'Cataract' fruit. Them salesmen is remindin' the buyers of the advantages of 'Cataract,' quarter inch sizin', same all the way through. Salesmen get buyers to buy 'Cataract' instead of somethin' else. Why is it Schwartz is sellin' that new brand of fertilizer he was tellin' us about this spring?"

"Sure and he waz tellin' us a better fertilizer it waz."

"Who made him think 'twas better? Remember when he was down in his office early last winter, settlin' up for our wheat, there waz a fertilizer drummer in there talkin' to him. He waz the feller made Schwartz think 'twas a better fertilizer. He waz a salesman just like we got. Another reason for havin' 'em instead of sellin' direct to buyers is that they protect us more on rejected cars and—"

"Rejected cars is it," interrupted Tim. "Phwat's thim? Listens loike this folne system has its tribulashuns at toimes."

"Yes, we do have cars rejected. When we sell a car f. o. b., we agree to ship on a certain day or within a certain number of days. We agree to load certain varieties, grades or sizes. We agree to load fruit that's in good condition. When the car arrives, if it looks to the buyer like we haven't lived up to our agreement, then he refuses to accept the car unless we make him an allowance."

"And that's their trick iv wigglin' out iv a toight place on a stuck market is it? The spalpeens they'd ought—"

"Wait a minute, Tim. Maybe there's some buyers'd do that, but maybe their kick is entirely justified. Who knows? We're hundreds of miles away. Our salesman is right there and if there ain't really nothing the matter with the car, the buyer won't try this wigglin' out process so much."

"And phwat's to privint yer salesmin and buyer becomin' newchally

HAYES "FRUIT-FOG" SPRAYERS

Our Customers asked for this advertisement—

LETTERS from customers all over the country tell us that we should call attention to an important quality of Arcadian Sulphate of Ammonia which we have never shouted about.

Here, in substance, is what these letters say:

"Tell people that your Arcadian Sulphate of Ammonia is fine and dry—that it needs no pounding, grinding or screening. This means big savings in time and labor."

In brief, Arcadian Sulphate of Ammonia is the most efficient top-dressing for all plants needing ammonia. Arcadian not only acts the quickest, but it contains one-third more ammonia (one-third more active plant food) than any other nitrogenous top dressing.

Another advantage: Arcadian is changed into nitrate form quickly enough to supply the plants' needs—yet not so quickly that there is danger of loss from leaching before it can be used.

Despite its superiorities, Arcadian is low priced per pound of plant food. Fifty lbs. of Arcadian contains more ammonia than two tons of barnyard manure.

DO THIS!

Send us a post card with your name and address. Tell us in what crops you are particularly interested. By return mail we will send you, free of course, bulletins showing you how to increase your crops by the use of ARCADIAN Sulphate of Ammonia. We believe these bulletins will prove valuable to you. Write for them today.

The *Barnett* Company
Agricultural Department
New York, N. Y.

Atlanta, Georgia

Berkeley, Calif.

Medina, Ohio

for December, 1923

interested in advoin' ye yer car is all wrong and splittin' the allowance?" suspicioned Tim.

"If the salesman reports that the car is off grade or condition, we get a government inspection. The federal government has men, who know fruit, right there on the markets just to settle such disputes. If he finds the car's all right buyer takes it; if not, it's our car. There ain't no chance for the salesman to get a rakeoff. Even if he arranges the amount of the allowance, or resells the car, he has to wire in his recommendations and the Central always can divert the car right out of that market. The point is that it's worth while to have a salesman right there on the job. First place, we don't get as many rejections, and when we do, we got a man there to handle it."

"Uh-huh," said Tim, for he was thinking.

"How many salesmen is it you've got?"

"They was tellin' me up to the Central they got salesmen in 165 different markets. In about 25 of the largest markets they have more'n one salesman. In this way they can cover the smaller towns around."

"How can yez be affordin' so munny?"

"We couldn't if they were sellin' only our fruit. But they're sellin' for lots of other co-operatives all over the United States. The cars from these others come at different times in the year and keeps the salesmen busy the year round. That keeps the cost down for each of us."

"Is that phwat yez be afther callin' the North American?"

"Exactly, Tim. The North American Fruit Exchange was a corporation that hired the salesmen on the markets and also supplied the sales manager at shippin' point. Then it got contracts with co-operatives to use that system of salesmen. Only now it's called the Federated Fruit and Vegetable Growers."

"And phwy waz they changin' their name? Waz it a new high soundin' wan they're wishin', or waz it come fther good reason for wantin' to change?" Tim added suspiciously.

"Only that they'd changed from a stock company to a co-operative association. This was the way of it. Two or three years ago the American Farm Bureau Federation was asked by its fruit members to appoint a committee to study fruit marketin'. Twenty-one men was picked from the important fruit states. After goin' in to it pretty thorough they found plenty of things the matter with fruit marketin'."

"Phwat waz thim ailments?" asked Tim interestedly.

"Same as what we've been havin' here. Lack of uniform pack; dumpin', poor distribution, speculation and such. These things have been botherin' the growers all over the U. S. Some sections of the country have been makin' some progress on overcomin' them."

"And how's thim alkchuns akkomplishin' this overcomin'?"

"By co-operative associations to grade and pack. That much is not new to us. But here's the point, Tim, where they're makin' the most progress, them associations is usin' a sales system. They're sellin' just like manufacturers of automobiles, farm tools and spray material like we were discussin'."

"Be on with yer rasonin'. This committee afther findin' the system waz workin', phwat more waz they doin'?"

"They found that lots of co-operatives was flounderin' around with their sellin'. Some because they weren't big enough to have a system of their own."

"Phwy didn't they be contractin' with the North American?"

"A lot of them did and lots of others contracted with other sales systems but others was bein' kept away by dealers who wanted to sell the stuff themselves. Their argument waz that these sales systems wasn't interested in gettin' the most out of the fruit; all they was interested in was makin' dividends on their stock."

"Rasonable rasonin', and did they find there waz the truth in the argy-mint?"

"They didn't try to find out. They was satisfied that a sales system was right. They wanted more co-operatives to use one. They decided to have one on a co-operative basis—operating at cost and owned and controlled by growers. They figured that the arguments which was keepin' some co-operatives from usin' a system couldn't be used against a co-operative sales system."

"I'm gettin' the gist iv it. Co-operatives should be co-operatin' on co-operation."

"That's just it, Tim. And that ain't all. None of them sales systems are as effective as they would be if they had more cars to sell. The North American was the biggest system, but even with its 30,000 cars, it wasn't economical to employ salesmen on salary in more'n them 25 markets. In the other markets the salesmen were bonded brokers, sellin' at so much a car. Didn't have volume enough to keep 'em employed all the time."

"Are thim salaried salesmen better'n brokers?"

"In general I guess they are. At least they're more economical. That's one hope of the Federated. With more cars to handle, they can change some of them large broker markets over to a salaried basis. And with more cars they can put salesmen or brokers into some additional markets where they haven't got anyone now. Anything that will draw more tonnage together will make this possible. A co-operative system ought to do that."

"Be afther tellin' me now how this North American's name cum to be changed," said Tim, harking back to the old question.

"The committee reported back to the American Farm Bureau Federation. They were told to go ahead and provide a national sales system on the co-operative basis. They could either build up one entirely new or could try to buy one of the systems that was already doin' business. They found they could buy the North American on a reasonable basis and did. I'm glad they did instead of tryin' to organize a new one. I don't think our central directors would like to depend on untried, inexperienced salesmen, or even on experienced men who hadn't been workin' together. An old team of horses pulls better'n a team of colts."

"Maybe that Fiderated is all roight but is the soize iv it too big?"

"Well, it's a big thing we're tacklin' this gettin' of perishable food to market and feedin' the people in the cities. We tackled a big thing in the war, but do you remember Tim, we didn't seem to get much of anywhere until we allies got to pullin' together. That's what won the war."

"Uh-huh," said Tim, for he was thinking.

PETER LENSEN.

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Bolting Weak Trees

TREES which have all the main branches practically coming out close together on the main trunk are naturally weak. It is very common to see one or more of these large branches crash to the ground. Sometimes these can be lifted back and bolted to the trees, but in many cases they cannot. It is not only the loss of these big branches which unbalances the tree that is to be deplored, but the exposed wounds allow the entrance of the spores of wood rotting fungi, which in a few years will rot out the entire heart of the tree and ruin it. Trees with such weak crotches often break down in ice storms and heavy snows.

Why wait for such breakage? Why not go through the orchard this fall and select those trees which are in danger and bolt them now? The cost is nominal, the amount of work required is small, and the saving in the end may be great.

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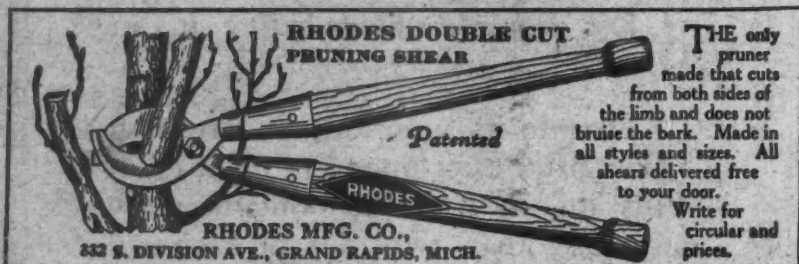
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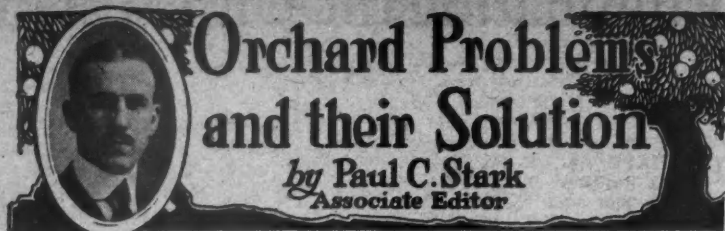
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Preventing Soil Erosion

I have twenty acres of orchard four years of age on land that is rolling and I have been cultivating the land but now it has begun to wash rather badly. I want to get the advantage of good growth and yet not have too severe erosion of the soil. What plans have you to suggest?—A. J. T., Illinois.

THIS is a problem that many growers have to solve and a lot of local conditions must be taken into consideration. In young trees, cultivation is a very valuable factor but where it is followed on rolling land, it is advisable to have a good cover crop during the winter to prevent washing at that time. In my own orchard I use Rye and Vetch sown about the last of August. This usually makes a very good cover and prevents most damage from washing rains in the spring. One warning about rye is its habit of very early growth resulting in the growers sometimes letting it get too tall and coarse so that when it is turned under it really causes a loss of the soil moisture. If you use rye, turn it under fairly early in the spring. I turn my rye under when it is about twelve inches high.

In orchards located on rolling land many growers get good results from using sweet and red clover as a mulch crop, keeping it mowed frequently and pulling the mulch around the trees which keeps the moisture in the ground and is a fairly good substitute for cultivation.

Other growers have followed a very good practice of cultivating one tree row one or two years, keeping a cover crop on it during the winter time and then the following year, cultivate the sod row, leaving the cultivated row to grow up in sod. By keeping every other row cultivated, it gives the tree most of the effects of cultivation and the sod strips prevent washing. I am following this method in my own orchard and from what I have heard and seen, believe it will be quite successful.

Self-Sterility of Sweet Honey

I have about a dozen sweet cherry trees that blossom very abundantly every spring, but most of the blossoms fall off and fall to set fruit. I also have a few Burbank plums which act the same way. What is the remedy?—J. W. B., Michigan.

IT IS very probable that your sweet cherry trees do not set fruit because of the lack of fertilization of the blossoms. This may be due to the lack of pollinating insects, such as bees, but more likely it is due to the fact that you have trees of a self-sterile variety and the pollen will not fertilize its own blossoms.

Your Burbank plum trees do not bear for the same reason. Most all varieties of the Japanese plum are known to be self-sterile and unless some other plum varieties are growing within a certain distance, there is little chance of a crop being set even with the fullest bloom.

The remedy for such a condition as you state is very simple. Other varieties of each fruit should be planted in among your present trees to act as a pollinizer. If this is impossible, a few branches in every third or fourth tree may be grafted or budded over to some other variety. When bees are plentiful the pollen will be well distributed in sufficient amounts to set a crop of fruit.

Certain varieties of plums and sweet cherries are inter-sterile; that is, pollen from flowers of one variety will not set fruit on the other. These cases are not numerous, however, and can be overcome by proper choice of a pollinating variety. The Black

Tartarian is a good pollinizer for self-sterile varieties of sweet cherries, such as Bing and Lambert.

Fall Plowing of Apple Orchard

Is it a good practice to plow an apple orchard in the fall? My orchard is planted on clay land which cannot be plowed until late spring.—F. E. B., Pennsylvania.

FALL plowing has been practiced by many fruit growers with very good results. This cultivation when done sufficiently late in the season has no effect on the maturity of the trees and in most respects it accomplishes the same purposes as early spring cultivation. There is one feature, however, which must be taken into consideration. If the plow is set deep enough to expose many roots, there may be some injury in case cold weather should set in before these roots get well hardened to the colder temperatures. For this reason one should not plow the orchard too late in the fall at a time just before freezing weather sets in. Fall plowing should not be done where there is liable to be soil erosion.

Scraping Old Apple Trees

I have heard that it is a good practice to scrape off the bark of old apple trees. Is this a good practice and when should it be done?—P. F. E., Indiana.

WHENEVER possible, it is a very good plan to scrape the trunks of old trees, especially old apple trees. The loose flakes of bark on the trunks and larger branches offer fine hibernating places for several insects, including in particular the codling moth. When this bark is scraped off, many of these insects are killed.

The work of cleaning up tree trunks may be done any time during the winter, or in the spring when the trees are pruned. It may also be done in the fall and any long trunks which are subject to winter injury may be whitewashed at the same time. Winter injury is caused by rapid warming up and cooling down of the bark on the southwest side of the tree, but such injury rarely occurs on low-headed and properly pruned trees.

Water Core in Apples

Some of my apples have water core very badly this fall. Is there a cure for this condition? I notice that only a few varieties seem to be affected.—F. O. M., Washington.

WATER core is a condition which is largely influenced by either rainfall or irrigation. Most varieties of apples are never affected, however, although a few seem to be very susceptible in some seasons.

As a rule, water core is more or less prevalent when a period of dry weather is followed by a period of heavy rainfall. This condition naturally cannot be controlled. However, it may also be caused by too large an application of water when trees are under irrigation. In late summer or early fall, apple trees should not receive too heavy irrigations, particularly if the soil has been allowed to become very dry before the water is added.

Water in the Spray Pump

IT IS very essential with the coming of cold weather that the spray pump and connecting pipes be very carefully drained each night. The freezing of water in the pistons and valves and in the pipes will raise havoc and will put many a fine power outfit out of commission.

Eliminating the Unprofitable Hens

by H. A. Bittenbender

PERHAPS one of the most important developments of the poultry industry has been culling. With the rapid development of any new line of work mistakes are sure to be made. Many mistakes have undoubtedly been made in culling. Too many people have obtained the idea that culling is easy. To be sure, culling is not extremely difficult in some flocks. Culling, however, is a real science or art. It is necessary to give the art of culling considerable thought and study, but even with the most intensive study and thought practice with trap-nested birds is really necessary to make one confident.

One can learn a whole lot from studying photographs, reading articles and handling birds. The real cull can easily be determined at certain seasons of the year. Culling, however, should be practiced in every flock every day of the year.

What to Cull.

There are really three kinds of culls to be eliminated from the flock: First, unprofitable hens—those birds who because of their conformation and make-up are unable to lay a sufficient number of eggs to make a profit. Second, birds lacking in vigor, vitality and constitution and resistance to disease. Third, birds suffering from some disease or infection.

Unprofitable Hens.

It has been found that hens of the coarse, meaty type are low producers. Some hens instead of turning feed into eggs lay on fat. This can usually be determined if a close observation is made. Low producing hens of the meaty type usually have eyebrows that are thick and overhanging. The eye is less prominent and sunken. There is considerable evidence of wrinkles and puffiness around the eyes. The head throughout presents a coarse, meaty, thick appearance. This coarseness is carried throughout and is shown in the meatiness and thickness of the pelvic bones.

Bagginess or overfat condition usually comes with low production. Oftentimes the breakdown, overfat condition does not appear until the end of the first laying year. Even though the birds show that they have made a fairly good production the previous year, it is well to eliminate them from the flock because the second year's production will usually be low. Another reason for eliminating the overfat baggy hens is that they are apt to drop off during the summer months. The loss in these heavy hens can be eliminated by culling them out of the flock, either at the end of the first laying year or when they appear in the early summer at the end of their second laying year.

Capacity.

Capacity is measured as the distance from the end of the keel bone to the pelvic or lay bones. In those birds where the point of the breast bone turns up into the body it makes the capacity smaller and not giving sufficient room for the development of the egg producing organs or for the proper development of the digestive system. Birds of this type do not have the capacity to take care of the large amount of feed that is necessary if high egg production is to be obtained. A short keel bone is equally objectionable. It will be noticed that the front of the breast bone in the high producing hen is in a different position relative to the wings than in the low producer. In the high producer the point of the breast bone is almost directly below the wings or forming a rectangle, while in the low producing bird the point of the breast bone comes in a line back of the wings or makes more of a triangle than a rectangle.

The length of breast bone and the position of breast bone are very im-

portant in determining cull birds. The width between the pelvic or lay bones is not of as much importance as the capacity. A hen that is in laying condition will be wider between the pelvic bones than a hen not in laying condition. While it is important to distinguish between hens that are laying and those that are not laying, yet too much emphasis must not be placed upon width between the pelvic bones.

Many people in eliminating hens from the flock measure only the distance between the end of the breast bone and the pelvic bone, and the width between the pelvic or lay bones. These measurements are only a guide as to whether the hen is laying or not laying. When the hen comes into laying the distance between the keel bone and the pelvic bones widens, likewise the distance between the lay bones. Fat is deposited in the abdomen and around the pelvic bones when the hen stops laying. Therefore, it must be kept in mind that there is a great difference in hens in laying condition and those not in laying condition. The head, comb, eye and general conformation are of more importance than the measurement between the pelvic bones and the abdominal region.

The writer will continue the discussion in the next issue on methods of distinguishing between good and poor producers.

THE IDAHO and other western green prune shipping districts had rather a disastrous year. This was a very sad disappointment. Prunes did not bring much more delivered than the growers had the right to expect f. o. b. Very elaborate steps had been taken this year to put up an unusually fine pack and the advertising fund had been used seemingly to good advantage, but results were not obtained. This in the face of the fact that peaches and pears were bringing good prices in the market and there was no over-supply of summer and fall apples.



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"I look for it (Stark's Golden Delicious) to be the starting point of **A NEW RACE OF APPLES**" (after he had seen its amazing habit of regularly bearing on new 1-year wood, year after year). "It beats anything I ever saw! High quality, a beautiful golden color and one of the best keepers. I have never tasted an apple that was

richer or higher in quality. The fanciest apple I ever saw Stark's Golden Delicious is the most remarkable apple production that has been made in recent years!"—are words of one of America's foremost apple and orchard authorities, **Professor Wendell Paddock**, OHIO State Horticulturist, Columbus, Ohio.

← **PROF. HOWE**, (N. Y.), Inspecting Crop on 3-Yr. Tree in N.Y. Experiment Station

He states: "Stark's Golden Delicious trees are Perfectly Hardy, —splendid growers." Photo at left shows 3-yr.-old Stark's Golden Delicious bearing crop—in very same Exp. Sta. orchard where Baldwin

apple trees did not begin bearing until 10 years old! This Stark's Golden Delicious tree bore BIG crop last year and this year (when only 5 yrs. old, bore 4 bushels of BEAUTIFUL GOLDEN APPLES)



Photo above shows Prof. Howe, N. Y. Exp. Sta., beside 3-yr. old Stark's Golden Delicious tree bearing crop. Last year at 4 yrs. old it bore Big crop—and this year, (when 5-yr. old) over 4 bushels!



Bore 2 1/2 Bu. at 3 1/2 Years!

Photo above shows 3 1/2 yr. old Stark's Golden Delicious in A. B. Hilty's orchard, Putnam Co., OHIO. He says—"ALL my Stark's Golden Delicious are bearing this year—some with 8 to 12 apples per foot of limb."



BORE 5 BU. WHEN 4 YRS. OLD
M. H. Manger, Berlin Co., PENN. (this photo) states:—"This Stark's Golden Delicious tree is 4 yrs. old—bore 5 bu. this year. It's 12 ft. tall."

Of it, NEW YORK'S most celebrated Pomologist, **PROF. U. P. HEDRICK**, declared in The Rural New Yorker:

"Stark's Golden Delicious is creating the sensation of the times among apple growers!"

Similar enthusiasm is shown by apple authorities all over the U. S. For example, **LUTHER BURBANK** reports:

"I have found Stark's Golden Delicious an unusually young bearer. They bore for me here the 3rd Summer after being set out and have borne regularly every year since."

That great Master Horticulturist, **Prof. S. A. BEACH**, Chief Iowa Horticulturist, declared:

"Stark's Golden Delicious is the most promising introduction of recent years among apples!"

PROF. C. I. LEWIS, Managing Editor AMERICAN FRUIT GROWER MAGAZINE (former Chief Oregon Exp. Sta.) states emphatically:

"No other apple has received such quick approval by both the orchard men and state horticulturists! In Stark's Golden Delicious we truly have a 'Golden Apple of the Hesperides'!"

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And **PROF. W. S. BROCK**, Sec. ILL. State Horticultural Soc. writes:

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Look at the photos of Stark's Golden Delicious shown on these 2 pages! Real FACTS printed beneath each photo! How YOU, too, will be delighted with it after you plant these wonderful trees!

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J. E. Eggers, St. Louis Co., MO. (see photo below) declares: "Stark's Golden Delicious is the most profitable tree that anyone can plant."

250 Trees—All Bore 3rd Summer!

Chas. Riedenbaker, Burlington Co., N. J. (see photo of one of his loaded Stark's Golden Delicious trees below) reports:—"All my 250 trees of this variety bore from 20 to 80 apples each in 3rd Summer!"

Bore Big Crop Despite Frost

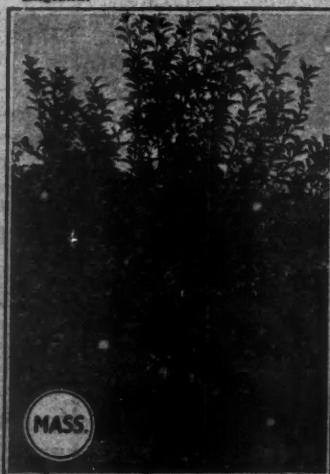
Geo. E. Smith, Bristol Co., MASS., reports:—"This Stark's Golden Delicious tree (see photo below)—3 yrs. planted—bore 36 apples, the result of its second blooming habit, after frost got the first blossoms. Best variety for New England."

Marvelous 2 yrs. in fruit

Prof. Otis Crane, Agriculture Instructor, ND., sends in a photo of this tree, set out 2 yrs. ago. Though it grew 3 ft. taller, it also bore 21 apples before taking photo.



EVERY TREE BORE GOOD CROP IN 3RD SUMMER!
J. E. Eggers' orchard, St. Louis Co., MO., contains 20 Stark's Golden Delicious. He writes:—"Every tree has 5 to 20 beautiful apples on it—3rd summer after planting. Some bore at 2 yrs. Stark's Golden Delicious is my BEST apple!"



of Apples!

See this Magnificent Apple

JOHN HARVEY KELLOGG, M. D.

Regarding it, JOHN HARVEY KELLOGG, M. D., world-wide Dietitian and Superintendent of the famous BATTLE CREEK SANITARIUM advises us:

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"It Is Creating A Sensation Among the Fruit Growers"
—Prof. U.P. Hedrick, N. Y.

Actual Average Size of Stark's Golden Delicious Apple

er Delicious is amazing America

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F. D. Straight, Allegan, Co., MICH., sent in the photo below, reporting:—"Wish I had 4,000 Stark's Golden Delicious trees instead of 40! They bear when mere babies—and you can't kill them with an axe. Here is one that is 4 yrs. old and bearing its 3rd crop. It bore 13 apples when only 2 yrs. old."



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(B) Light Weight, famous Cushman Engine—8 h. p.—weighs 300 to 600 lbs. less than any other.

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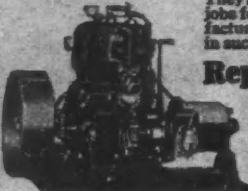
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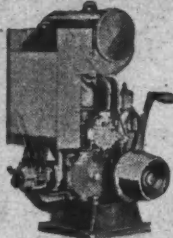
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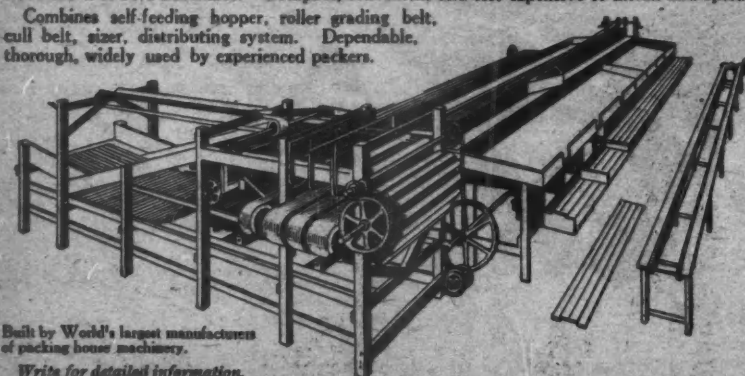
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MARKETS AND MARKETING

THE APPLE market has been a sad disappointment to all concerned. There was little activity at the big meeting in Detroit. Very little disposition was shown to buy. It was felt at that time, or shortly afterwards, that if some of the large Western shippers had reduced their figures slightly they would have been able to sell a large tonnage to a legitimate trade. This, however, is doubted in some quarters since after apples reached the figure which should be low enough to satisfy anyone, the buying has been negative in spite of the fact that the quality on the whole has been good. There has been good fall weather all over the United States. Fruit has been picked in good condition, promptly packed and quickly shipped until practically about all the cold storage plants in the country are now well filled, in fact the movement at one time in October was so heavy that it reached nearly 1500 cars a day.

Western Jonathans were a little disappointing owing to the very large percentage of "C" grade, but the later varieties have shown a great improvement. The Delicious is proving to be the bulwark to the country in districts like Wenatchee and Yakima since its heavy yield, ranging from 500 to 1000 boxes per acre; in fact, growers produce it cheaper and will receive from 25 cents to \$1 more. Those growers having a good percentage of Delicious will pull through in good shape.

Some of the eastern tonnage from Michigan and other states has been very attractive, of good quality and good condition, but considerable of the tonnage in the eastern market has been rather small, some poorly colored, and there has been in many cases rather serious defects from fungus diseases.

A new phase in marketing has been the establishment of the f. o. b. auctions in the big centers in the east. This seemingly helped the melon trade and probably was of material assistance to grapes, as it started some movement when the market was dead. It is doubtful, however, whether it has been of any advantage to the apple men, but rather a disadvantage. The auctions are not being handled by the big men in the apple game. A class of buyers at times have been attracted, who have made opening bids that would make them ridiculous in the regular auction markets. The tendency has been to make people wait and see what is going to happen, and the establishment of these auctions has probably led to the cancellation of early buys. Perhaps the greatest value of the f. o. b. auction is to show the growers what the ideas of some of the buyers are concerning values, but the aim of the men behind an f. o. b. auction is to make more money and not to necessarily help the grower.

Apple week did not seem to have the pep and usual stimulus and there was not the impetus given to the market that was hoped for.

Exports are extremely heavy, over double of last year. There is now a very dark cloud on the export horizon, however, as the British Government is now contemplating a tariff of \$1.20 a hundred, or 60 cents a bushel.

Virginia did quite a lively export of such varieties as York Imperial and is storing a large percentage of its crop, although some of the fruit is being consigned to Western markets.

Little activity is taking place in New York and there has been much discouragement in Michigan owing to the slow market.

It is a strange combination. The country is more prosperous than it has been in years and the big cities are able to buy large quantities of fruit, yet there are relatively low prices on apples and very poor movement. It simply means that the present system of marketing apples has been outgrown and it is going to be necessary to adopt an orderly system of marketing the apple, similar to that in vogue with the orange, banana, walnut and almond.

REPORTS from the citrus districts indicate at this time probably the largest citrus crop in our history. It is now estimated that Florida will have some 20,000,000 boxes of citrus fruit, at least 12,000,000 boxes of oranges and 8,000,000 boxes of grapefruit. Reports come from California that the crop is unusually good. Some authorities quote a crop as high as 75,000 cars. This may be a little extravagant, but at any rate the indications are for a fine crop for both Florida and California.

The citrus fruit outlook in the Gulf states is very fine. In the famous Satsuma district of Alabama a very good crop is in prospect—some 400 to 500 carloads—while Louisiana and Mississippi show some increase.

Fortunate it is that the citrus industry is so well organized that on the whole orderly marketing is practiced, and those handling the citrus marketing seem able to meet most any emergency.

Much interest has been aroused in the big Chicago market by the fact that the California Citrus Exchange, which has always sold its oranges in the Chicago market direct, is now selling through the auction markets, the two auction companies in Chicago combining to handle the very heavy tonnage.

CALIFORNIA Prune & Apricot Growers' Ass'n has advanced its prices on dried fruits over the opening quotations. Prunes are now being quoted from three-fourths to a cent a pound over the opening and apricots one to two cents higher.

The Pacific Northwest prune crop was greatly reduced by the heavy rains, it being estimated that possibly as high as 40 per cent of a crop was lost. There will still be, however, around 40,000,000 lbs. of prunes in the Northwest. Indications are that these will run about 20 per cent 30s; 10 per cent 40-45s; 45 per cent 40-50s. This indicates a very satisfactory range in sizes.

THE PRICE offered for Western boxed fall pears, such as Howell, Camille, D'Anjou, Bosc and Winter Nells, was not very satisfactory at shipping time. Consequently, a large percentage of the tonnage was placed in cold storage. Much of this tonnage, however, has not been holding up as well as usual. Buyers who expected to hold pears until January now find much of the fruit turning and showing signs of becoming mellow and are being forced to place the fruit on the market. Even the Winter Nells, which seems to arrive in eastern markets in a hard, green condition, is showing indication of early ripening even in storage. Just why this condition exists no one knows. Good quality pears at the present time are bringing very fair prices. The eastern pear outlook has been rather gloomy. Stored Bartlett's did not bring the price anticipated and Kieffer have been a great drag on the market, prices ranging from as low as 50 cents to \$1 a bushel f. o. b., with not much activity in the market.

What Happened to the 1922 Northwest Apple Crop?

by J. H. Auvil

NESTLING among the mountains of the great Northwest are several small valleys which nature has provided with all the attributes for the production of a first-class apple. Good soil, abundance of water for irrigation, good drainage, uniformly cold winters, the heat of summer tempered by winds from snow-clad mountains, warm days and cold nights, with almost no cloudy weather from apple blossom to harvest, make an ideal condition for the production of a high-grade apple.

So wonderful has been the response of the soil to cultivation, so bountiful the yield, and so perfect the quality of fruit that men from every walk of life have been attracted here and the finest thought of a generation has been given to the development and production of the best apple that can be grown. During the score of years that apples have been grown commercially in the Northwest, the Wenatchee district has gained a reputation for producing an apple unexcelled in keeping qualities. The crop of 1922, however, was not up to the standard of former years, either in high percentage of extra fancy fruit or in keeping quality.

The question of what caused the early deterioration of the 1922 crop of apples is one that has given rise to a little thought and considerable discussion. Not since the first production of apples in the district has the quality been so poor or the percentage of extra fancy grade so small. This was a bitter disappointment to the producers of this section since they have built up a reputation for raising the biggest, reddest and best apple grown anywhere, and, since owing to the fact that they are 3,000 miles from their best markets, they have a heavy freight differential to overcome which can only be done by maintaining their former high standard of quality production.

Development Too Rapid.

A comparison of last year's growing conditions with those of former years might give a clue to the defect in last year's crop. Since we have the same soil and the same irrigation systems that have been used before, it seems that we might look to changes in climatic conditions for the reason for any radical changes in the quality of apples. Let us see where in the season last year differed from former seasons. Ordinarily, the growing period from blossom time to harvest for this district is four and one-half to five months for Jonathans, and about two weeks longer for Delicious and Spitzenburgs, with another two weeks for Winesaps. In the spring of 1922 the blossoming season was 10 days late. The harvest season began two weeks earlier than usual, thus shortening the period ordinarily consumed in the development of apples about three-fourths of a month, or about one-sixth of the usual time of development.

It seems to be a law of nature that the life period of anything is in proportion to the rapidity of its development. A mushroom grows over night, lives two or three days, and decays as quickly as it grew. It takes a hundred years to produce an oak tree, but oak wood is very resistant to decay. Following out this idea, the keeping quality of an apple would be in proportion with its period of development.

Although the season was late starting, it was unusually warm all through the growing season, causing rapid development of the apples. The fact is that development was so rapid that by actual measurement apples were found to increase in circumference three times between June 1 and June 10. This rapid development continued throughout the season so that notwithstanding the fact that the growing season was much shorter than usual, the fruit averaged larger than in ordinary seasons. In consequence, the texture of the fruit was

less firm and the color not as good as usual.

Acute Car Shortage.

To add to the difficulties of marketing a product not up to standard, the district experienced the most acute car shortage in its history. To make room in the warehouses for all fruit possible, boxes were packed to the ceiling—12, 13 and sometimes 14 boxes high instead of five boxes as is the usual warehouse rule. This not only entailed the added expense of piling and tearing down but cut off air circulation, which is so necessary to the preservation of fruit. Warehouses were kept in this congested condition for an average of about 60 days.

The damage resulting from the car shortage was a great deal heavier than it would have been had normal weather prevailed. During the time of the congested condition of the warehouses the weather was unusually warm, day temperatures reaching 80 degrees and night temperatures seldom below 40 degrees, making it impossible to reduce warehouse temperatures below 50 to 55 degrees. On the other hand, if the fruit could have been kept moving through the warehouses in an orderly manner and could have been delivered promptly to destination, in other words, if transportation had functioned properly so that the fruit could have gone directly into consumption or into cold storage, there would have been no loss except that occasioned by the lower percentage of extra fancy grades and the early ripening of the fruit.

There are those who would attribute all losses sustained to the Great Northern Railway Co. because they did not furnish cars to move the fruit at shipping time. That they are responsible for millions of dollars of loss on this account, they themselves will not deny. Yet it may be seriously doubted if their responsibility reaches to the losses entailed by the fact that the percentage of extra fancy grades was 20 per cent less than in ordinary seasons or that apples kept for home consumption decayed with greater rapidity than usual.

The acute car shortage occurred early in October and lasted until about the first of January. This occasioned heavy shipments in the dead of winter, resulting in a great deal of fruit reaching markets in either a frozen or cooked condition, all of which was the fault of the carrier and for which no excuse is offered.

While the actual loss on the 1922 crop was large—several million dollars—a greater loss will result in years to come from a lack of confidence in the quality of the Northwest apples unless, as the writer believes, the poor quality of fruit was a result of abnormal climatic conditions which are not likely to occur again. Confidence will be restored upon the delivery of fruit up to the former standard of perfection. The future of the Northwest apple industry depends upon the ability to produce goods up to the standard upon which its reputation was established.

Whitewashing Trees

WHITEWASHING trees is of practically little or no value unless the owner simply enjoys seeing the trunk and lower branches of the tree white. Lime has little or no insecticidal or fungicidal value. Whitewash, when applied to peach trees so as to entirely cover them, might have some value in retarding the opening of the buds in early spring and thus fighting an extremely early frost. On the whole, however, whitewash has been given a great deal of credit which it does not deserve. Good sprays of lime and sulphur and oil are vastly superior.

SOUTH AFRICA dries black grapes. Last year 850 tons were dried while this year they plan on drying some 1300 tons. They hope to sell a lot of this tonnage in New York at about 10 to 11 cents, delivered.



Don't Gamble with Fruit Sales!

Every step you take in producing a crop is based on tried and proven methods. You can't afford to take chances there.

But when it comes to marketing the crop, how many growers strangely enough, discard certainty and begin to gamble with unseen forces!

Our plan of selling eliminates the element of chance.

Through us, your fruits and vegetables are offered to from 300 to 350 waiting buyers, not a few casual buyers. It is not held on sidings for this or that trumped-up reason or reconsigned to several other points, entailing heavy demurrage charges and deterioration. As soon as your shipment comes to hand it is sold promptly to the highest bidder in a market where top prices prevail.

Our check for full amount, less our small commission, is forwarded to you within twenty-four hours after sale. You can tell just what we received for your goods by consulting the columns of the New York Daily Fruit Reporter.

Cut out the chance, the "gamble" and place your Selling Machinery on the same safe, sound, profitable basis as other branches of your business.

"More Dollars for Fruit Growers" is the title of a booklet that will interest you. May we send you a copy?



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which orchardists claim will establish REMARKABLE RECORD IN TREE PROTECTION AND SAVING. Solves problems fruit growers heretofore have been unable to meet. The most perfect protection against rabbits, mice, woodchucks, rats, moles. Easiest applied. Perfect fastener; can't scratch or tear. Rugged, double guard of fine quality heavy galvanized steel. Get cheapest guard on market! Write today for important descriptive booklet—free. Address Dept. A. FRUIT GROWERS SUPPLY CO. 71 Murray St. New York

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It matters not where you live, east, west, north, south, "Friend" Sprayers are working near you and are being distributed in car shipments.

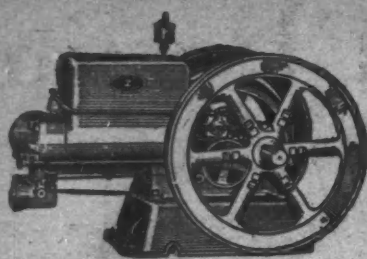
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Gen. Strahan, South Jacksonville, Fla., says: "The 'Z' engine which I have used for more than a year has exceeded our greatest expectations. At times we operate it for stretches of 24 hours duration. Very economical. Requires no attention whatever." ... P. W. Oswald, Baker, Oregon, says: "The 'Z' engine bought in 1916 is the most reliable piece of machinery I ever owned."

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WITH THE CO-OPS.

WE FEAR we hear too much these days about the type of organization which is necessary, if a co-operative body is to be a success. Speakers are roaming this country from the east and west, loudly stating there is only one way to organize. Some of the most successful so-called co-operatives in the United States are often not really co-operatives but they do consist of big groups of growers and they get together and improve the grade, pack and marketing of their crop to the extent that they are receiving much more money than would otherwise be true, which is the goal of collective marketing.

Whenever a group of growers in any part of the United States spend too much time haranguing over the type of organization, it is a pretty good indication that something is wrong with the industry. They have not realized that it is not the type of organization that is so essential but it is the co-operative spirit, the willingness to stay together, the willingness to really raise sufficient money to run the business, the willingness to secure good managers and pay them so as to keep them, and the willingness to have boards of directors, executive committees, etc., work with the management to make the organization a success. These things are more important than the types of organization. Whenever a co-operative is passing through frequent reorganization and refinancing, it is much in the same condition as a private business which is being continually reorganized and financed. There is a feeling that something is wrong with such an organization. We need to build up in all of our co-operatives continually a spirit of real co-operation and to realize that some things must be sacrificed, that if the co-operatives were removed from the industry, private buyers and packers would soon run things in such a way that growers would wish again that they had their co-operatives to fall back upon.

SIX HUNDRED sixty-seven farmers' business organizations from which the U. S. Department of Agriculture has received reports, sold 100,519 cars of fruit valued at \$183,388,970 during the season of 1922. Over 39 per cent of total sales were by the associations marketing citrus fruit; over 19 per cent by an association selling raisins; and over 6 per cent by the associations selling apples.

The number of associations handling the different commodities, the number of cars of each commodity handled, the total amount of the sales, and the percentage which each group was of the total, are given below:

Kind of Fruit.	No. of Ass'ns.	No. of Cars.	Value.	Per Cent.
Citrus fruits.	323	43,520	\$71,690,377	39.1
Raisins	1	6,200	35,419,724	19.3
Apples	130	12,646	11,085,801	6.1
Grapes	44	9,870	7,285,130	3.9
Strawberries	95	5,283	5,552,988	3.1
Peaches	38	4,670	5,128,598	2.8
Cranberries	4	1,660	3,858,510	2.1
Pears	32	3,150	3,450,000	1.9
Misc. fruit	...	13,720	39,905,842	21.7

Total 667 100,519 \$183,388,970 100.0
Miscellaneous fruit includes apricots, blackberries, cherries, currants, figs, olives, pineapples, plums, prunes, quinces and all fruit where kind was not specified.—April, Co-operation.

THERE is often a tendency in co-operative movements to consolidate the duties of officers, thus reducing the number of men employed and materially reducing salaries. Even the huge tobacco co-operatives have recently made tremendous slices in the salaries of their executives.

Such movements at times are necessary where tonnage does not war-

rant the overhead involved. It must be borne in mind, however, that the slashing of salaries cannot be carried too far, that when the time ever arrives that the competitive buyers pay better salaries than do the co-operatives that it is only a question of time until the best talent shifts to the competitor and the co-operative has to take what is left. American business as a rule awards its executives and the tendency has not been to cut down but to advance them when they show merit in their work.

THE RECENT annual convention of the Florida Banana Growers' Ass'n. held at Bartow, proved to be a great success. It was the largest gathering of men and women interested in banana culture ever held in Florida. Two hundred delegates participated in the discussions.

It was the general opinion that for commercial purposes the Cavendish and Hart varieties would bring the best results.

The following officers were elected: Charles L. Stokely of Mount Dora, president; C. B. Aultman of Kissimmee, vice-president; W. E. Bolles of Oldsmar, secretary and treasurer. Kissimmee was chosen as the place for the mid-winter convention to be held in February, 1924.

A STRAWBERRY growers' association has been formed in Brawley, Calif., namely, the Imperial Valley Strawberry Growers' Ass'n. The strawberry acreage in this section consists of 200 acres, of which 195 1/2 acres are in the association. W. H. Lowther is president of the association; A. Takahashi, secretary and manager; M. Nagano, vice-president; T. Kanlye, treasurer; D. Tokeshi, assistant treasurer; S. Yoshino and G. Shigematus, inspectors. The board of directors is comprised of the officers and M. Mayeda and K. Sugiyama.

Strawberries from this section average from \$2 to \$10 to \$11 per crate, shippings in the first part of the season bringing the highest prices.

SOME progress is being made in Michigan along co-operative lines. Michigan grapes and apples and other fruits have during the past two years been receiving a much wider distribution than had otherwise been true. There are something like 20 fruit associations in Michigan, organized in a state council. These are working through the Federated Fruit & Vegetable Growers, Inc.

It seems to be a step in the right direction. It will help standardize, distribute and advertise Michigan fruit.

A 25-CENT can containing 3 to 4 oz. of walnuts of the "Diamond" brand will be featured after December 1 by the California Walnut Growers' Ass'n. After a thorough investigation, it was proved that the average housewife purchases only 25 cents' worth of shelled walnuts at a time, and therefore in order to meet this demand, a tin to be retailed at 25 cents is being announced.

ACCORDING to the United States Department of Agriculture, the California Pear Growers' Ass'n, San Francisco, paid the growers \$10 a ton on August 21 when pears were still pouring through the canneries into the cans. This was about one-third of the total price. Another payment was made on September 10, of one-half the amount still due, and a third payment on September 24, of one-half of the remainder. The final payment was planned for October.

Nitrate of Soda

Michigan Agricultural Experiment Station reports a gain of 7.47 bushels of wheat per acre from top-dressing in the spring with 100 lbs. of Nitrate of Soda. Virginia Station Bulletin number 221 says, "On

wheat crops needing nitrogen an increased yield of 5 bushels per acre can be expected from each 100 lbs. of Nitrate of Soda applied per acre." Demonstrations in Pennsylvania have shown an average gain of 7 1/2 bushels of wheat per acre and 37% increase in the straw.

Potatoes New Jersey Experiment Station shows that the largest yields of potatoes are obtained when Nitrate of Soda is used as the sole source of Nitrogen. What is true of potatoes is true of other vegetables.

Early Vegetables They come earlier and main crops become better and more prolific when Nitrate of Soda is used. This is why Market Gardeners use such large quantities.

Tobacco Ohio and Virginia Experiment Stations report wonderfully profitable gains from the use of Nitrate of Soda on tobacco. My own demonstrations in Pennsylvania prove that 200 lbs. of Nitrate of Soda used at planting time will add 100 lbs. or more tobacco to the acre.

Apples Practically all the Experiment Stations in the apple districts now recommend Nitrate of Soda as necessary and are recommending its use in the spring before blossom time. This applies equally well to Peaches, Pears, Cherries and other fruits.

Why not try it on your crops?

My Free BULLETIN SERVICE, covering the use of Nitrate of Soda on all kinds of crops, is issued for your information and explains how to use it, where to use it, when to use it. If you want it send me your address name the crops you grow and to identify this advertisement add the number 3632.

Dr. William S. Myers, Director
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ESTABLISHED 1860

Apple Sizing Machines

by G. E. Fager

BOTH the consumer and the trade are demanding a more uniform pack of orchard products. In a discussion of sizing machinery uniformity refers principally to size. The grading machine really sizes and does not grade. There is always a certain amount of inefficiency in the hand-sizing of fruit. The uniformity and size depends upon the skill and care of the man doing the work and in times of rush, this care may often be slighted. Furthermore, hand sizing is slower than when done by machinery.

In all manufacturing or business operations there is a constant effort to reduce the costs of production, wherever possible, by replacing hand labor with machinery. The same principle may be applied to production in the orchard. Whether the use of a sizing machine in the packing shed will help to reduce the costs of packing fruit is a question that merits some consideration.

Western fruit growers have within recent years built up an enviable reputation by means of their standard packs of fruit. It has been found that a large percentage of the apples grown in that region pass over sizing machines during the process of packing. A great majority of the owners feel that the machine not only sizes more uniformly but also helps to lower the costs of packing.

In Eastern and Middle Western fruit regions many sizing machines are in use. Growers using these machines claim the following advantages: Cheaper grading and packing and more uniform sizing than when done by hand.

There are two general types of sizing machines now in use, those that size according to the weight of the fruit and those that size according to the shape or the diameter of the fruit. The first type is more commonly used in the West, while the latter type is more generally used in the East and Middle West. The general principles of operation of these two types will be discussed briefly.

One weighing machine works as follows: An endless carrier is made up of canvas bottom carrying cups. These cups are on a series of rods, the rods being carried forward by two side chains. The cups are held horizontal by prongs and these prongs slide along the side rails. Openings in the side rails over each of the bins are bridged across by the bars of simple balancing scales and these bars are provided at their opposite ends with cups into which the regulating apples are placed. These regulating apples determine the size of fruit that is delivered to the bin below. Therefore, when one of the moving cups receives an apple the prongs supporting the cup move along the side rail and pass over these balance arms until one is reached that carries an apple of such weight that the weight of the apple in the moving cup causes the balance arm to lower and thus the moving cup is tilted from its horizontal position enough to allow the apple to roll into the bin below. To change the size of the apple desired in a certain bin all that is necessary is to change the size of the "regulating apple." This machine also provides for efficient sorting as the fruit is carried along on canvas belts in plain view of the sorters.

Another machine of the weighing type operates differently. The individual apples are conducted to revolving cups. These cups are simply fastened to an arm and the arm in turn fastened to a revolving shaft. When the shaft is revolving the cups attached to the arms have a "wheel-like" motion and therefore the apple placed in the cup is tossed out. The weight of the fruit determines the distance it will be thrown and in so doing determines the bin into which it will fall. The fruit is not damaged as the distance it is thrown is slight and furthermore it alights upon canvas protected traps before entering the bin.

There are various designs of ma-

chines that size the fruit by shape or measurement. One machine operates in the following manner: The fruit is carried on canvas belts to the grading belts. Each belt is a broad, endless web made up of rings of like diameter. The belts are in a series and each one is made of a different size of rings. The smallest apples are removed first. As the fruit drops through the rings it is carried to the packers by means of endless canvas belts. The sorting may be done either before or after sizing or possibly during the sizing.

There are many other designs of the measuring type. For example, one machine measures the fruit by causing it to pass along two large screws, which turn "away" from each other, and when the fruit reaches the proper sized opening it drops through to the bin below.

Some idea has been given of the operation of the different types of machines, but, regardless of the machine which the fruit grower should decide upon, there are several features or "qualifications" which any satisfactory sizing machine should possess. Some of these points are discussed here: It must size the fruit accurately: One object of the machine is to do away with inefficient hand sizing and if it does not do this then one of its important features has failed. It must not damage the fruit: All parts of the machine with which the fruit comes in contact should be well protected with canvas wherever this is possible. Also, the machine should operate so as to handle the fruit with little or no bumping or jolting. It should require the least possible amount of hand labor, other than sorting, while the fruit is passing over the machine: A machine that requires constant attention while in operation defeats another of its most important features—the reduction of the amount of hand labor and the reduction of packing costs. Its capacity should warrant its use in preference to hand labor: The machine should size more fruit than can be sized by hand to make its installation in the packing shed profitable. It should be simple in construction, yet substantial: Simple construction means fewer parts and probably fewer chances of repairs and adjustments. Also, a simply constructed machine is more easily operated and repaired by the man having an ordinary working knowledge of machinery. This is not true of the highly complicated machine. It should be constructed so as to facilitate sorting and packing: Either before sizing, after sizing, or even during the process of sizing the fruit should pass slowly before the sorters so that they may have opportunity to remove the blemished fruit. The sized and sorted fruit should then be conducted to the proper places where it is to be packed. It should provide for the efficient disposal of culls: The culls should be removed to some point away from the machine so that the men working at the machine will not be bothered by having to carry them away. The cost of the machine must not be prohibitive: The question whether to use a sizing machine rests, of course, with the grower and he will have to decide whether conditions such as he has will warrant such an investment.

Scraping Trees

SCRAPING trees is not a bad practice. Many old apple and pear trees have a shaggy appearance from the accumulation of old loose bark. Under this loose bark are hiding during the winter thousands of disastrous insects. By scraping off the bark from the trunk and lower branches, many of these insects will be destroyed and others will be exposed so the birds can destroy them. Almost any implement which is handy for scraping will suffice. The triangular hoes, or even a short handled garden hoe, will work very nicely.

A strong, well-balanced head is more essential than a strong arm in pruning.

Orchard Heating

—a Necessity

ORCHARD Heating is now classed with spraying, pruning and cultivating as one of the necessities of fruit growing. What good to work and struggle for sound and healthy fruit if a freeze comes along and ruins the crop?

With orchard heaters you can defy cold weather. They insure your trees, your fruit, your profits.

Thousands of fruit growers have found this out in actual experience. They wouldn't dream of going through the cold season without adequate heater protection. No matter what the weather they are safe—with a full crop to sell when many others have little or nothing and prices are high. Orchard Heating Pays—and we have the evidence to prove it.

The Scheu Smokeless Heater

This orchard and grove heater is the standard for citrus groves and others where conditions are likely to be severe. It has passed the strictest tests. It is officially endorsed by the "Sunkist" growers. It burns cheap fuel oil—easy to light and regulate, economical and efficient. And it is made by American Can Company, a guarantee of reliability and good workmanship.

We also make other types and sizes of heaters, such as the Canco Smudge Pot, popular among deciduous growers. Effective protection at least cost is often obtained by a combination of two or more types of our heaters. We study your needs, and tell you what will insure you. A demonstration is the best test—let us make one for you. It won't obligate you in any way.

American Can Company

Orchard Heater Department

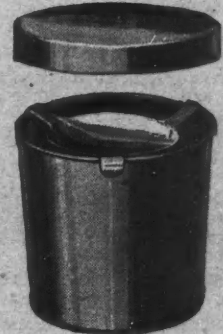
Los Angeles, Cal. Toledo, Ohio
SKINNER MACHINERY CO., Dunedin, Fla.
Distributors for Virginia, North and South Carolina, Georgia, Alabama, Florida



The Fruit Growers Supply Company, Los Angeles, representing 10,000 growers of Sunkist oranges and lemons, has approved the Scheu Smokeless Orchard Heater, made by the American Can Company.

The Heater California Endorses

For citrus groves the Scheu 9 gallon heater is the type preferred for effectiveness and durability combined with economy. Also in 7 gallon capacity. Orchards equipped with 50 of these per acre saved fruit in California freeze of 1921-22 when outside temperature was 17° F.



No. 2 Canco Smudge Pot

Orchards equipped with 100 of these smudge pots per acre maintain temperature at 36° F. without outside temperature at 24° F. Cheap and simple—especially suited to deciduous orchards.

FOR deciduous orchards frost protection with No. 2 Canco Smudge Pots costs about \$50 per acre. Combination protection can be had with our other style heaters at slightly higher cost.

MAIL THIS COUPON

American Can Co.

I have _____ acres

of _____

at _____

and would like a demonstration of your Orchard Heater. I understand that this does not obligate me in any way.

Signed _____

Why Blame the Esch-Cummins Transportation Act?

THE statement is often made that the famous "Section 15-A" of this law requires the Interstate Commerce Commission to make and keep rates high enough to enable the railways at all times to earn a net return of 5% or 6 per cent on their valuation. It is said the necessity of letting the railways earn these so-called "guaranteed profits" is what keeps rates up. This is all untrue. The Transportation Act is not in the slightest degree responsible for the fact that railway rates are higher now than before the war.

Railway Profits Reduced Under Transportation Act

In the two years, 1916 and 1917, the net return earned by the railways averaged \$2,800,000 per day. The Transportation Act was passed in 1920, and the war-time "guarantees" to the railways were withdrawn on September 1, 1920. In the three years ended August 31, 1923, under the Transportation Act, the net return of the railways averaged only 4 per cent on their valuation and was but \$2,100,000 a day.

How can it be said the Transportation Act has kept up rates by "guaranteeing" the railways large profits when the net return actually earned and received by the railways since the Transportation Act was passed has been \$700,000 a day less than it was before?

Increase of Expenses Under Government Operation Main Cause of Present Rates

The principal cause of present rates is the increase in railway operating expenses which was largely due to the war, and which occurred under the government operation of the railways.

The government seized the railways and began operating them at the end of December, 1917. In that month their operating expenses were \$3,106,000 a day.

The government quit operating the railways in February, 1920. In that month their operating expenses were \$14,310,000 a day. Therefore, the increase in expenses under government operation was \$11,204,000 a day.

What has occurred since then? In the first eight months of 1923 the operating expenses of the railways were only \$13,528,000 a day. Therefore, the reduction of expenses since government operation ended has been \$782,000 a day.

To sum up: In a little more than two years of government operation the operating expenses of the railways increased \$6,204,000 a day. Since the Transportation Act was passed and the railways were re-

This is one of a series of advertisements published to give the farmer authentic information about railroad matters. Any questions that you would like to ask will be cheerfully answered. Address:

WESTERN RAILWAYS' COMMITTEE ON PUBLIC RELATIONS

650 Transportation Building, Chicago, Illinois

S. M. FELTON, President,
Chicago Great Western Railway,
L. W. BALDWIN, President,
Missouri Pacific Railroad Co.,
RALPH BUDD, President,
Great Northern Railway,
H. E. BYRAM, President,
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CARL E. GRAY, President,
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J. E. GORMAN, President,
Chicago, Rock Island & Pacific Railway,
HALE HOLDEN, President,
Chicago, Burlington & Quincy Railway,
C. H. MARKHAM, President,
Illinois Central Railway,
C. E. SCHAEF, President,
Missouri-Kansas-Texas Lines,

Ancient Avocado Groves of Guatemala

(Continued from page 8.)

not been done by anyone having in mind the classification of the cultivated avocados.

"The task is made difficult by the fact that the southern Mexican and Central American region, where the wild prototypes are probably to be sought, has been the scene of intense agricultural activity for centuries. The primitive forest has been leveled to the ground to make way for maize fields, the maize fields have been abandoned, the inhabitants of the region have emigrated to other parts, and the forest has again taken possession."

It is certain that the splendid avocados of today are the product of centuries of more or less unconscious selection on the part of the Guatemalan Indians, just as the choice fiberless mangos of East India have been produced through selection by the Hindus. In the case of the mango, however, the Hindu has been enabled to perpetuate an unusually choice variety by resorting to vegetative propagation. This appears never to have been practiced in Guatemala, therefore, when a choice avocado tree dies the variety is lost.

Growth Not So Rapid.

At elevations of 4000 to 5000 ft. in Guatemala the growth of the avocado tree is not so rapid as it is in California and Florida. This is mainly due, advised Dr. Popenoe, to the mildness of the climate; there is none of the hot summer weather which produces such rapid growth in the United States. Another cause is the prevailing lack of cultural attention. Naturally a tree which is manured regularly and irrigated when rainfall is lacking will make more rapid growth than one which is supplied with an abundance of water during part of the year, is forced to withstand a long drought during the remainder, and never receives manures or fertilizers in appreciable quantities.

Many large trees in Guatemala still in profitable bearing are said to be 50 to 60 years old. The 50-year-old tree seems to yield just as good fruit as the younger ones. Some avocado growers affirm that a tree does not produce its best fruit until it is 20 to 25 years of age. In habit of growth there are two types of trees, the slender, erect type and the broad, spreading type, though there is no lack of intermediate forms. The trees grow from 50 to 60 ft. tall, with a trunk 4 ft. thick, and the crown from 50 to 60 ft. in spread. This is the dimension of the mature 50-year-old tree, the younger ones being not so tall.

The very large trees of the smaller varieties of avocados, whose fruits weigh from 6 to 8 oz., produce as many as 3000 fruits in a single crop. Larger varieties, whose fruits are 18 oz. in weight, may produce as many as 1800 fruits provided the tree is of mature size.

Rabbit Injury

FRUIT growers often wait until too late in the fall to find that the rabbits have already been doing destructive work. While rabbits work disastrously following the early snows, still they do not wait for snowy weather before they start their damage. Young trees should be protected by veneer or wire protectors. In addition, rubbing the trunks of the trees with hog and sheep liver several times during the season serves as a repellent. By putting on old gloves, this material can be smeared on the trees. Spray the trunks and lower branches occasionally with good strong lime and sulphur, which also serves as a repellent. But whatever means of protection are used, the grower needs to be vigilant and to supplement this protection by rigid inspection at frequent intervals during the fall and early spring.

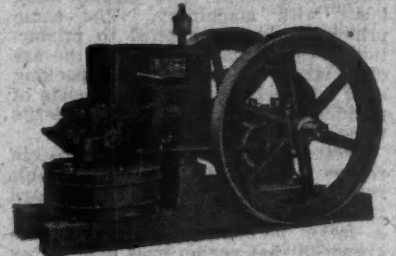
Subscribe for the American Fruit Grower Magazine, 5 years for \$1.00.

Puts 2 H-P Engine on Your Place For Only \$1424

Ed. H. Witte, Famous Engine Manufacturer, Makes Startling Offer On Witte Throttling-Governor Magneto-Equipped Engine.

Farmers, now more than ever, appreciate the need of power on the farm and know they can make \$500 to \$1,000 additional profit a year with an all-purpose engine.

Ed. H. Witte, nationally-known engine manufacturer, has announced a 2-horse power engine which burns either kerosene, gasoline, distillate or gas with a special throttling governor. It delivers full power on kerosene, gasoline, distillate or gas. This



new WITTE ENGINE has revolutionized power on the farm as it handles practically every job with ease at a fraction of the cost of hired help. Easily moved from one job to another, it is trouble-proof and so simple that a boy can operate it.

To introduce this wonderful new engine to a million new users Mr. Witte has arranged to put it on any place for a 90-day guaranteed test. Since it costs only \$14.24 to take advantage of this sensational offer and nearly a year to pay the low balance, Mr. Witte confidently expects every progressive power-user to be soon using a WITTE. Every reader of this paper who is interested in making bigger profits and doing all jobs by engine power should write today to Mr. E. H. Witte, 2145 Oakland Ave., Kansas City, Mo., or 2145 Empire Bldg., Pittsburgh, Pa., for full details of this remarkable offer. You are under no obligations by writing.



Green's Trees Shrubs, Vines



For over 45 years thousands of growers have bought direct from Green's nurseries. They have saved money and obtained strong, healthy, hardy Northern grown, full-rooted stock, true-to-name. Through them, Green has built a wonderful reputation for fair dealing.

Apple, peach, pear, plum, quince, cherry, nut trees; grape and ornamental vines; gooseberry, currant, raspberry, blackberry and rose bushes; strawberry plants, all grown in our own nurseries. Offered direct to you at money-saving prices and guaranteed true-to-name.

Green's Money-Saving 64-Page Catalog

Is a textbook of useful, practical information on fruit culture and the care of plants and vines. It lists and describes only best growing and bearing varieties. With catalog we send FREE booklet, "How I Made the Old Farm Pay." Write today.

Green's Nursery Co., 1473 Green St., Rochester, N.Y.

from NURSERY to YOU

The Orchard Home Department

by Mary Lee Adams

Polly Puts the Kettle On

DID YOU know that women still clamor for cooking lessons? It's consoling to learn that another of our fears lest this old world be going to the bad by way of the new and deplorable tendencies shown by our girls, is groundless. We heave a sigh of relief as we see fearful flappers prone to develop into domestic little Jenny Wrens. By the time the girls of the so-called "first unspanked generation" have given their wings a good stretch and learned to fly, back they come fluttering to some love nest. There the majority may be found quietly intent on trying to fulfill the duties of wife and mother.

Eighty per cent of our women marry. Woman's greatest business remains the home. True, the standards of competent household management have grown far more scientific. Budgets, unknown of yore, aid in wise and economical expenditure. Babies have rigid schedules under which they thrive amazingly. Plain sewing has developed into the art of home dress-making.

The kitchen is a laboratory for balanced menus bearing directly upon health. Proper precautions against illness and competent care of the sick are expected of every good homemaker. She should know how to plan and decorate the house as well as how to manage it. Her fitness includes citizenship in addition to wifehood and motherhood, and she takes an intelligent interest in community problems. To attain this standard it is evident she needs special training, and there are schools that teach all these things.

In order that many may profit by them, a large number of prominent women's organization are bending their energies to secure an amendment to the present Vocational Education Act which shall place more adequate funds at the disposal of such public schools as would incorporate thorough training in home economics in their curriculum. The present Federal Appropriation is so slim that the states which last year took advantage of the offer to meet Federal Aid half way, were forced to appropriate seven times as much as could be secured from the Federal Government in order to meet the demand.

When we learn that the only government bureaus exclusively devoted to the interests of women and children receive just .005 of one per cent of the total government appropriations, we are scarcely surprised to hear from Miss Mary McSweeney, secretary of the American Home Economics Ass'n, that only one woman in 200,000 has a chance for training in the special schools of domestic science.

Such eagerness has been shown by girls and women to take advantage of this training that large numbers of working women attend evening or part time classes in domestic science. This is no fit subject for miserliness on the part of Uncle Sam. It is hoped the incoming law-makers may be influenced to increase the greatly insufficient appropriation. Home preparedness makes for efficiency and for immensely increased comfort, health and actual economy in the home. It also works successfully toward that most desirable goal which lifts the "American housewife from drudgery to ordered independence."

A Jewel of an Idea

THE GRAPE growers told us if we ate more raisins we'd have so much fun in our systems that we'd be too strong to break either physically or financially. We could earn more money by sticking to our work for longer hours without even experiencing any symptoms of the dread "three-o'clock fatigue." We had never felt, or even heard of, this diabolical diurnal malady, but it seemed pretty fine to rout it by the pleasant device of

eating more dried grapes. So we ate and enjoyed more raisins and the grape growers enjoyed the profits.

The cereal manufacturers captured our imagination by picturing the loveliest children whose exquisite curves had been filled out with products of wheat, corn, rice or excelsior. We decided that our children must have some too, and fat cheeks for the kiddies and fat purses for the manufacturers resulted.

It has remained for the gentle jeweler to launch the very most dazzling suggestion for brightening the dull round of existence. He begs to assure the American husband that the jeweler stands ready to rescue him from the divorce courts. Says the jeweler—"The divorce courts of America are full of women who are there because they grew tired of their husbands eternally forgetting anniversaries."

If a married man will but furnish his favorite jeweler with a list of the anniversaries in his family, he need fear no domestic upheavals. The thoughtful jeweler undertakes to notify careless husbands in plenty of time for them to select the handsomest jewels with which to regain or retain a wife's devotion. Never again need he risk overlooking the day that marks his years of wedded bliss, nor fail at the proper moment to assure his wife that she is just as beautiful on this, her latest birthday, as when they first met. The jewelers rely confidently upon the active co-operation of all thrifty married women.

The Fight Against Disease

SANITATION and hygiene have been so dinned into the ears of housekeepers that occasionally a little impatience creeps in and we are disposed to think that perhaps all these cares and precautions are unnecessary. It is a good thing for us sometimes to pause to recall what has already been accomplished in the organized fight against disease and what remains to be accomplished. We will then resolve anew never to desert the ranks of those who do their share toward improving health conditions in the home and out of it.

In a general way, we know that yellow fever used to assume the proportions of a plague in some of our southern states. Even so far north as Philadelphia, it actually decimated the population of that city in 1793. As we never hear of yellow fever now, we seldom think of it. The Board of Health of the Rockefeller Foundation reports that there are now in the entire western hemisphere but two small foci of infection, one being in Mexico and the other a "narrow coastal zone of Brazil."

Hook-worm, which was formerly called by various names such as laziness, no-accountness and general cussedness, is yielding ground. The proportions to which this insidious sapper of human energy might grow if neglected is shown by the fact that in a section of India inhabited by 40,000,000 people, it is estimated that over 36,000,000 are infected by hook-worm. That means that you yourself would most likely have it if sanitation were as greatly disregarded here as there.

If a bird in a cage can sing my dear,
As though the days of spring were here;
If a bird, forgetting the time o' year

Can sit in a room that is dark and dim,
As though he sat on a greenling limb;
Yea, sing for those who imprison him;

Surely then you and I can sing,
Whatever shadows around us cling,
Or what the moment may chance to bring.

Surely then you and I can be—
Though bound in body, in spirit free—
Can sing a little as well as he.

—Douglas Mallock.

The Greatest of Holidays

CHRISTMAS, the greatest of holidays, is once more close upon us. Children are wild with expectant delight. Their elders are somewhat tired, a little wistful perhaps, as they think of the manifold changes that have taken place since their own care-free childhood.

Parents of modest means have had a hard time to get together the gifts and toys that will make the youngsters' hearts overflow with joy. Often they are tempted to complain that it is a great nuisance. Yet, when the longed-for morning dawns, it is a grouchy soul indeed that does not respond to the wonderful spirit of Christmas.

Love, Not Gifts, Bring Joy.

The beautiful spiritual significance of the day has, at times, been in danger of being lost in the material expression of gifts. More than was right or wise has been expended, not by any means always on those nearest and dearest to the giver. There was an unworthy striving to do as much as the So-and-Sos.

A more sane and far more delightful appreciation of the season is taking the place of extravagant gift giving that wore us out as we wearily searched the shops for something that "Would look just as well and cost less." Our friends, if we may judge by ourselves, are a great deal more pleased with some loyal expression of affection than with a costly token which it cracks the purse strings to offer.

As for the children, everyone knows that on Christmas day no child, left to itself, will be found playing with its costliest toy. Yet, as much for the sake of the elders as for that of the little ones, Christmas gifts are most desirable. There are few purer pleasures than to witness the rapture of a group of young children with their Christmas toys. Then, as never in later years, their utter satisfaction with life is undimmed. A healthy child at Christmas time, surrounded by toys and love, comes as near as mortal can to being in Paradise with no snake in the offing.

The Deeper Meaning.

Even quite small children may be led to regard the day as meaning something beyond the mere receiving of presents and license to eat more and better food than usual. Birthdays are regarded by children as important events. When the mother tells them of a dear little Jesus who was born on that day, one who all his life long loved children with a peculiarly sweet and gentle affection; and always told grown people that they must care for children in every way, something of reciprocal love will awaken for this loving little Jesus. A childish reverence will enter into their feeling for the celebration of His birthday. They will be the more ready to follow His example later on.

The tiny lessons in self-sacrifice that they learn as they spend their pennies on some trifle for brothers and sisters; the overweening pride with which they bring out the supposed surprises for father and mother; the special forbearance they must exercise on that day toward the younger ones so that their delight may be unmarred; all these are valuable experiences and really a part of the general joy. They bring to the small bosom a glow of satisfaction that is very healthy and stimulating.

"Times change and we change with them." Fortunately there is much of the old country life left and lots of simple old-fashioned merriment such as best befits the season. Even cities have now generally adopted the good practice of community Christmas trees round which a whole neighborhood sings the sweet old carols and hymns.

A Fine Feature of the Day.

Neighborliness is one of the finest features of Christmas. Many an old grudge or unworthy coldness toward our fellows is dissipated as, steeped in the warm atmosphere of general goodwill, two who have long looked askance at each other will spontaneously hold out a cordial hand and utter words of greeting that warm the heart and best the entrance to the common place of worship.

Christmas has something of the effect of a good, old-time revival. It stirs up our zeal. Not so permanently perhaps as might be wished, but sufficiently to give us a boost up the ladder of friendliness and to put a real brake on neighborhood selfishness, gossip or back-biting.

Though the very loveliest picture of Christmas is that of the family at home gathered round the shining tree or merry table, there is a generous tendency to share our joy with others. This induces all sorts of festivities, and the young folks that are back home for the holidays find that home is, after all, the best place to have a good time.

Your Brother's Keeper.

Another noble effect of this greatest of holidays, is that our hearts are now more open to the troubles of others; we are more apt to think of how they can be helped and to put the thought into practice. It's cruel to know that there are some who "by reason of poverty are forgotten" in the time of general rejoicing. There is no man so poor that he cannot find someone poorer whose lot he may brighten.

Now is a very good time to recall the pathetic lines which Frank Staunton puts into the mouth of an old darkey:

"'Tis jus' so weak an' sinful,
Or else so old and poor,
That Mr. Christmas done forgot
The number on my door."

If you can find a door so humble that it bears no sign for the guidance of Santa Claus as he passes by with his pack, open that door and bring in the sunshine of remembrance and kindness. The recollection will cling warmly to your heart after you have forgotten what you gave to Margery or how handsome a gift Rose Anne bestowed upon you.

A Sunny Memory.

Looking back on earlier days, there is no brighter memory than that of the jolting, hilarious drives with which my sister and myself were used to celebrate the day before Christmas. Tucked into an old-fashioned buggy behind a horse that was old enough, but not wise enough, to know better than to lash out with his heels from sheer exhilaration in the frosty air, we would lift our feet to the top of the dashboard for safety from those iron hoofs and jog away with a store of good things for the needy friends of the family. Friends of every shade of complexion from blond to black.

Off we went through the woods, down country roads so deep in mud or so rigid with frozen ruts that an automobile would have shrieked in dismay. But old Sergeant went snappily forward, rocking the buggy crazily from rut to rut and sportively flinging a pair of wicked heels if anything like the flick of a whip or the rustle of dead, dried leaves got on his nerves.

The best bit of all led through the heart of Laundry Lane, where neat cabins sunned themselves amid fluttering clotheslines. Out would come the mother to receive her special basket while the round eyes of the many pickaninnies barely failed to fall out in wonder. "Law! Miss Mary, a whole dozen oranges! I can have a whole one for myself. I never has had a whole orange in all my life."

And so on to the next clearing in those mountain backwoods where my happiest holidays were spent. That's why I'm passing on to you the thing that gave me most joy in the Christmases of the past.



"Just the Thing for Xmas"

Coleman Quick-Lite

"The Sunshine of the Night"

THIS wonderful lamp will bring the good cheer and radiant happiness of the holiday season to every "home evening" throughout the year. 300 candle power; brighter than 20 old style oil lamps or lanterns.

Surprise Mother on Christmas morning with a Quick-Lite Lamp. Dad or Brother will welcome the dependable Quick-Lite Lantern. Always ready for any job any night.

30,000 dealers sell Quick-Lites. If yours can't supply, write to nearest factory branch.

Dept. F. G. 17.

The Coleman Lamp Co.

Wichita, Kansas;
Philadelphia; Chicago; Los Angeles;
Canadian Factory—Toronto.

KEEP WELL "A PEMCO SPRAY"

PEMCO

The mechanical flushing out of the nasal passages prevents infection and disease and prolongs life as the nose is the most fatal portal of entry of infection into the body.

PEMCO Nasal Spray is prescribed by leading physicians. It prevents colds and clears the head and nose.

PEMCO is a solution of menthol, oil of eucalyptus and creosote in liquid petrolatum.

Special Offer For a limited time only—we will send a ONE DOLLAR bottle of PEMCO together with a tampon all at once, valued at one dollar and a half for the small size of \$2.00. Send your order today.

PROPHYLACTIC MFG. CO., 4125 Cass St., Chicago

CHATS WITH FRUIT GROWER'S WIFE

By HAZEL BURSELL

Dos and Don'ts of Menu Making

IT makes for efficiency and saves money and worry to plan your meals in advance for a week, or even for a day, allowing leeway of course for the utilization of leftovers. A few practical suggestions to simplify and make meal planning easier for the housewife are therefore given. If followed, better balanced meals—in which all essential food materials in sufficient quantities are included—will result. Your family will be money ahead and still will be well-fed.

Don't try to use ready-made menus—use them merely as suggestions. They are not suited to your family needs and tastes, or your locality in all probability.

Plan to serve at least one hot dish at each meal, as a general rule.

Have plenty of variety from day to day, using the fruits and vegetables at hand in their seasons. Don't try to give a large variety of foods to young children, however.

One green vegetable at each meal is desirable, or at least once a day.

Do not try to have too many dishes at any one meal—allow for two servings of one of them instead. It will be easier to have a variety of things from day to day, if the family doesn't get 'em all at once.

Do not have two dishes of the same type at any one meal, as lima beans and baked beans. The meal will be too rich in one type of food and lack some other essentials.

Serve a leftover portion to some member of the family who particularly likes that dish.

Avoid heavy, rich desserts after a heavy meal. Mince pie on top of the Thanksgiving dinner is a time-honored custom, but is bad from the dietary standpoint.

Eat regularly and in temperate amounts.

Do not serve several foods known to be difficult of digestion all in the same day.

Appetizers, such as clear soups, bouillions, and cocktails, should come early in the meal.

Avoid serving the food in same form twice on the same day.

Serve concentrated foods with something that will "dilute" them. Thus cheese is more easily digested when eaten with crackers.

Serve small portions of rich foods, and you will have the same actual food value, besides preventing possible sickness.

Never serve the same food in several ways at any one meal.

Serve foods of different color, flavor, and texture together if possible. They are more appetizing this way. We eat with our eyes as well as with our mouths.

Do not repeat favorite dishes too often—every ten days or two weeks is often enough. In this way they will remain favorites.

Keep left overs till the "day after tomorrow" if possible without spoilage, so the family can forget they are left-overs.

Try to develop and bring out the natural flavor of each food, so that things don't "all taste alike." Some cooks, and good ones too, are prone to serve their meals all with the same flavor.

If the food is to be served in courses have contrast between the foods of the courses. Further, the more courses you have, the simpler each should be.

Serve less energy-giving foods (sugars, fats, starches) in warm weather,

especially at the beginning of the warm season.

Mildly sweetened foods are more wholesome and more easily digested. Serve at least one uncooked food each day. Fruits and vegetables seem designed to meet this need.

Guard against too heavy protein diet—meats, eggs, fish, beans, cheese, etc., fall in this class. Most people don't relish fats sufficiently to overeat them.

See that foods containing minerals and cellulose (roughage for bulk) are included in your menus. Fresh vegetables and fruits, beans, cheese, milk, raisins, dried prunes, greens, etc., are mineral sources.

The housewife should study her family as to the ages, kind of work and play, and preferences, and plan her meals to meet their requirements, not forgetting to consider in the process the family exchequer (purse).

Cleaning Windows Easily

ARE you one of the women to whom window cleaning is pure drudgery because of the "grandmotherly" methods used?

Do you still use the soap-and-water-rub-till-dry method with all its strain and hard work?

If you do, then this is meant for you. You can buy at any grocery store a small cake of easily dissolved material, which when applied to the windows with a dampened cloth gives a frosty appearance, and when dry can be rubbed off together with all the dirt. The trade name is "Bon Ami" and it is very inexpensive. The windows take on a wonderfully clean, gleaming effect with a minimum of effort through its use.

The Polishing Process.

Just take a pan of water, a small white rag, your bar of Bon Ami and your polishing rag and go the rounds. Moisten the rag, rub some of the paste from the bar and rub it over the window, on both sides. Then go on to the next window. When the first window begins to get dry, use the polishing rag to remove the Bon Ami and dirt, taking care to leave no spots unpolished. Do not let the white paste get too dry on the windows or certain spots will dry hard on the glass and will be difficult to remove.

Bon Ami is excellent for polishing nickel ware, copper teakettles, etc.

Another method which is efficient for larger glass surfaces is to follow the regular soap and water washing with a rubbing, using a rubber attachment set horizontally on a long handle. To use it begin at the top and rub down the glass with the rubber piece. All the water will be rubbed down, leaving the glass clear and clean. Dry the rubber piece each time before using again with a cloth. This system is efficient, but it works only for large-paned windows.

Let's have no more of the back-breaking toil necessary under the old-fashioned cleaning system. Farm mothers have too many other worthwhile things for which to conserve their strength.

Carving a Fowl

IF the head of the family objects to carving the fowl even on holiday dinners, when the table does not seem festive without the whole bird appearing in all its tempting brownness, perhaps it is because he is not sure of his carving "Etiquette." If that's the case, have him read the following instructions, and the family chicken will never be able to scare him out again. Place the fowl on its back on the

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platter. If dressing has been piled around the bird and the platter is not extra large it is perfectly proper to remove part of the dressing to another dish especially provided for it.

First insert the carving fork across the middle of the breast bone. Then cut through the skin between the breast and thigh. Bend the leg back and cut the ligaments with which the thigh bone is attached to the back. Separate the drum stick from the thigh at the joint. Cut off the wing. Then cut off the other leg and wing.

Slice the White Meat.

Now he is ready to carve the breast. Slice it in thin slices, slanting from the front of the breast bone down toward the wing joint. Next insert the knife just in front of the breast bone. Then cut backward to the joints at the neck, and take off the wish bone. If any member of the family prefers the back or the neck piece, these may be unjointed in the middle of the back, and the ribs may be removed from the neck piece.

If these instructions are followed, Dad need never have trouble in carving a fowl deftly and with good grace, unless of course the bird was not caught within a reasonable age, or the cook failed to do her duty by him. It goes without saying that the carving knife should be sharp.

The Family Kodak

WHY NOT give some member of the family—one who likes mechanical things and is old enough to appreciate it—a good kodak for Christmas? He could not be given a more worthwhile present or one which will add more to the happy memories of the whole family. Every time a good picture is secured, a lasting record is made of that thing or event. And the farm has countless interesting things that need to be "put on record."

No place offers such a rich fund of picture material as the farm. There's the boy's first time on the tractor, daughter canning fruit, a thrifty flower garden or vegetable garden, the fruit picking crew, the tall-corn field, extra big pumpkins, the new colt, the family dog, Dad's beautiful team of horses, the chickens, mama pig and her flock of porkers-to-be, and all the rest of the interesting things on the farm. Remember that the value of a picture increases rapidly with age.

The boys and girls can learn to develop and print their own pictures and thus eliminate much of the expense, as well as provide them with an interesting and worthwhile hobby. A good camera and the chance to use it is another thing that will go a long way toward "keeping 'em down on the farm."

Christmas Candies

IT'S heaps of fun to make your own Christmas candy, and the whole family will want to take part. If you've never done it before, you don't know what you have missed. For the readers of the American Fruit Grower Magazine I am giving a set of tried-and-true candy recipes. Each has its own very explicit instructions for making and if these are followed, you should get good results in every case. A dry, clear, cold day is best as moisture in the air makes the process harder.

The chief concern is cooking the mixture to the right stage. Possibly a little explanation of the terms will help. The "thread" is not very reliable as there are so many degrees of threading. The "soft ball" stage means that the mixture will form a soft ball in cold water—a ball which may be picked up in the fingers. The "hard ball" cannot be impressed with the fingers. The "crack" rattles when some of the mixture is dropped in cold water. The most accurate method is to use a thermometer for the different stages.

Molasses Taffy.

1 c. Karo. 1 c. sugar.
1 1/2 c. pure dark molasses. 2 T. butter.
1 t. vinegar.

Combine all ingredients and cook to the crack stage. Pour on buttered plates and when cool enough to handle, pull until a light yellow color. Have the hands cold and dry when pulling the taffy. Draw the candy out into sticks, cut into pieces and wrap in oil paper. Walnuts (black ones are especially good) may be added just before pulling.

Fondant.

1 c. sugar. 1/2 t. cream of tartar.
1/4 c. water. 1 t. flavoring.
Put the ingredients in a smooth granite saucepan. Stir, place on stove and heat gradually to boiling point. Boil without stirring to the "soft ball" stage. Wash off the sugar from the sides of the pan to prevent any crystallization. Pour into plate, cool slightly, add flavoring and beat until creamy with a fork. Then work with the hands until perfectly smooth. Put into a bowl and cover with paraffin paper to get firm.

Fondant is the foundation for many candies. Coconut may be kneaded in just before putting away. When firm it is broken into pieces.

"Opera Caramels" are made by stirring white fondant over hot water until it is melted and then adding 1 c. chopped nut meats. Pour in buttered pan and cut in squares when nearly cold.

Maple Nougat.

1 c. maple syrup. 1/4 c. water.
1 egg white. 1/2 c. mixed nut meats.
1 c. dark Karo. 1 t. vanilla.

Cook mixture of syrups and water to soft ball stage. Pour half of mixture over beaten white of egg. Cook the remainder of the syrup until it rattles, and pour into egg mixture. Add the flavoring and nuts and pour into a mold. Cut or break into pieces and wrap in pieces of oiled paper.

Pinecho.

1 1/2 c. brown sugar. 1/2 c. nut meats.
1/2 c. white sugar. 3 T. butter.
1 c. condensed milk.

Boil the sugar and milk together until the mixture forms a soft ball when a bit is dropped in water. Then remove from fire, add the butter and let stand till quite cool, though not cold. Then beat until it begins to get firm. Pour out on buttered platter to cool. Cut in squares.

Chocolate Fudge.

2 c. sugar. 1 T. Karo.
1/2 c. milk. 1/2 c. nuts.
2 T. grated chocolate (1 sq.). 3 T. butter.

Boil the milk, sugar, chocolate and Karo to soft ball stage. Take off the stove, add the butter, and cool without stirring, until comfortable to hold in the hands. Then beat for a while before adding the nuts and vanilla. Beat until it begins to get firm, then pour into buttered platter or plate to harden. Cut in

squares before entirely hard, as it will have broken edges if cut when hard.

Divinity.

2 c. white sugar. 1/4 c. water.
1 c. Karo.

(Boil to crack stage.)

2 egg whites. 1 t. flavoring.
1 c. nut meats.

Beat the eggs until stiff but not dry. Pour syrup slowly over egg whites, beating constantly. Add nuts and flavoring and beat until it begins to get firm. Drop on oiled paper or pour in buttered platter to cool. If poured in platter, break into serving pieces when cold.

Peanut or Walnut Brittle.

2 c. sugar. 1 c. shelled nuts.
Spread the nut meats on the underside of a granite pie pan. Melt the sugar in a sauce pan and when melted (it will be a golden brown color) pour over the nut meats. When the candy is cold, loosen by knocking gently underneath the pan. Then break the brittle into pieces.

Stuffed Dates.

Dates and walnuts. Granulated sugar. Wash the dates, drain and dry. Stuff with one-fourth of a walnut. Roll in granulated sugar. The date may be dipped in melted chocolate and cooled as quickly as possible.

Parisian Sweets.

1 lb. raisins (seeded). 1 lb. walnuts.
1 lb. figs (may omit) Powdered sugar for 1 lb. dates. shaping.

Wash the fruit with the exception of the raisins. Remove the stems from figs, stones from the dates, and pick over the raisins. Combine raisins, figs, dates and nuts and put through the food chopper. Knead well, shape into bars or cakes and cut into cubes. Roll the cubes in powdered sugar. Let stand to mellow.

Taffy.

2 c. white corn syrup. 1/4 c. water.
1 c. white sugar. 1 t. glycerine.
Cook until it will make a hard ball in water. Remove from fire and add 1/2 t. soda. Cool in plates which have been buttered slightly, and pull. When hard, pull out into long strips, twist, and cut into serving pieces with a pair of scissors.

Peanut Butter Candy.

1 1/2 c. white sugar. 1/2 c. milk.
1 1/2 c. brown sugar. 1 c. peanut butter.
Let boil until it forms a soft ball when dropped in cold water. Beat until creamy. Pour into buttered plates and while still soft cut into squares.

Chews.

2 c. white sugar. 1 c. condensed milk.
1 c. butter. 1 c. Karo.
Mix ingredients and bring to the boiling point. Then stir in one more cup of condensed milk, adding it a little at a time so that the mixture will not stop boiling. Stir constantly till it forms a rather stiff ball in cold water. Add 1 c. nut meats and pour in shallow pans, square off and wrap in wax paper at once, otherwise it will become sticky.

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drops of
SPRAY

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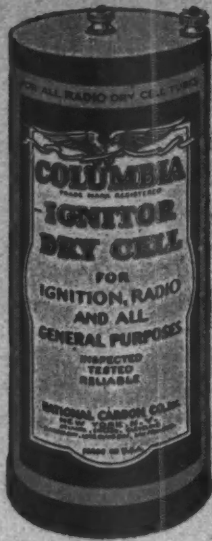
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The Spirit o'Christmas

by James Edward Hungerford

Christmas comes but once a year,
Bringing heaps o' joy an' cheer!
Bringing happiness an' smiles;
Blotting out the frets an' riles;
Bringing hope to hungry hearts;
Binding up the wounds an' smarts;
Filling folks with love an' peace—
Lighting homes with Christmas trees!

Loving ones, with trusting prayers,
Ask for surcease from their cares;
Others ask for gifts o' gold;
Some for warmth, instead o' cold;
Some are seeking gifts o' love,
From the Giver up above;
Strength an' courage; hope an' cheer,
Is what they are wanting here.

'Taint the GIFT that makes for joy;
Precious jewel, or tinsel toy;
'Taint the present, rich an' fine,
Stirring your heart, friend, or mine;
It's the SPIRIT back o' it—
HOW it's GIVE—that makes a hit!
If the gift is backed by LOVE—
It comes straight from up above!

Fall Planting

WHEREVER the climatic conditions are favorable and extremely cold winters are not experienced, it is very desirable to plant in the fall rather than in the spring. Trees become thoroughly established during the winter and are in position to start into growth early in the spring and are thus able to make more rapid progress than spring planted trees. In a section subjected to extremes or to frequent freezing and thawing periods, late winter and early spring planting is preferable.



No. 9621. Set of Doll's Clothes, consisting of a pretty dress with collar in surplice effect, a smart cape with convertible collar, petticoat, chemise and tam-o'-shanter hat. Cut in sizes for doll, 16, 18, 20, 22 and 24 inches high. For material requirements see pattern envelope.

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No. 1714. Jacquette Blouse. Cut in sizes 16 years, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 2 yards 40-inch figured material with 1/4 yard 36-inch dark material and 1/4 yard 10-inch white material.

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No. 1897. Slenderizing Lines. Cut in sizes 28, 36, 40, 42, 44 and 46 inches bust measure. Size 36 requires 3 1/2 yards 40-inch material with 12 1/2 yards braid.

No. 1898. Costume Slip. Cut in sizes 16 years, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 2 1/2 yards 36 or 40-inch material.

No. 1886. Two-Material Morning Frock. Cut in sizes 34, 36, 38, 40, 42 and 44

inches bust measure. Size 36 requires 2 yards 36-inch material with 1 1/4 yards 36-inch contrasting.

No. 1905. Pretty Apron Design. Cut in sizes 36, 40, 44 and 48 inches bust measure. Size 36 requires 1 1/4 yards 36-inch material with 5/8 yards binding.

No. 1813. New Style Jacquette. Cut in sizes 16 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 1 1/4 yards 36-inch material with 1/4 yard 36-inch contrasting.

No. 8906. Useful Christmas Gift, that the modern home-maker would be delighted with. Cut in one size and requires 1 1/4 yards 36-inch material with 1/2 yard 18-inch material for bottom.

No. 1892. Becoming Frock for Mature Woman. Cut in sizes 36, 38, 40, 42, 44, 46 and 48 inches bust measure. Size 36 requires 4 1/2 yards 40-inch material with 1 1/4 yards 36-inch lining. The embroidery pattern No. 659 costs 12c extra.

No. 1891. Charming Blouse Style. Cut in sizes 16 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 1 1/4 yards 36 or 40-inch material with 1/4 yard 36 or 40-inch contrasting.

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The Little Red Berry Did It

(Continued from page 5.)

some very brilliant pictures of small fruits, more especially strawberries.

"This man has the right idea, I think, and I'd like to turn that land, enriched by so long pasturing, top down, and after thoroughly cultivating and enriching still more, turn it into a strawberry bed."

Josiah Eckels laughed grimly.

"That would be a pretty big bed of berries," he said thoughtfully. "I don't know where you could find a market for such a lot of little red berries. Why, the fields of pasture furnish enough strawberries for our own use. I'm afraid it would be a waste of time, Ralph."

"Father, don't you think there are other ways of making money than the plodding potato and corn raising of your past life?" returned the son. "Let me have the land for a few years and I'll show you."

"It's yours, Ralph, and I'll let you off from other farm work so you'll have ample time to do your experimenting, but remember, I warn you not to be too sanguine."

When Ralph, elated over the prospect of having a chance to work a bit of land all his own, plowed and harrowed the hog pasture his gaze ranged higher up to where a considerable elevation overlooked the rest of the farm.

"That's just the spot for a peach orchard," he mused. "With proper fertilization that would produce a fine lot of trees. Sometime, but not now. This man with the pedigree berry plants gives a lot of subjects for thought. He has succeeded, why not I?"

And this was true. Ralph read the glowing accounts of immense crops of strawberries raised by others, and the business appealed to his sense of the artistic. He felt that he was not cut out for a dairy or grain farmer, but that fruit growing appealed to his finer nature as nothing else had, and he meant to go ahead and see what he could do.

The 2 acres were thoroughly subdued under plow and harrow, as well as the disc. When in proper condition the boy ordered his plants. He had saved a little money which he had earned working at odd jobs, and this came in handy now for the scheme he was proposing.

The planting of the plants occupied some time. Immediately they were set the boy went through between the rows with a cultivator. His little book on fruit growing told of the necessity for frequent cultivation in order to preserve moisture.

The rows were set in what was called hedge rows, one plant wide, 6 in. in the rows. Ralph felt proud of his work when it was completed. His father came to view the field when the plants were all set in even, long rows across the field.

"Well, Ralph, I reckon you have done a good job," said the farmer. "The next thing will be to sell the berries. Nobody around here would pay real money for strawberries, you know that. It seems almost too bad to spoil a good cornfield to set to mealy strawberry plants."

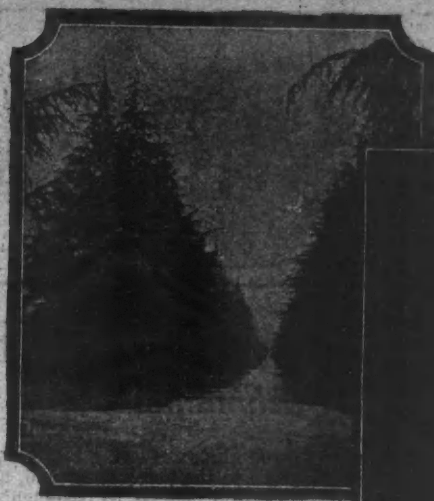
Ralph kept his own counsel. He might make a sad failure of the whole thing, but he had faith that he was going to succeed.

The next year the berries came on in due season, and that boy's field was a sight to behold. The berries did not all come together, he having taken the precaution to plant early, medium and late berries.

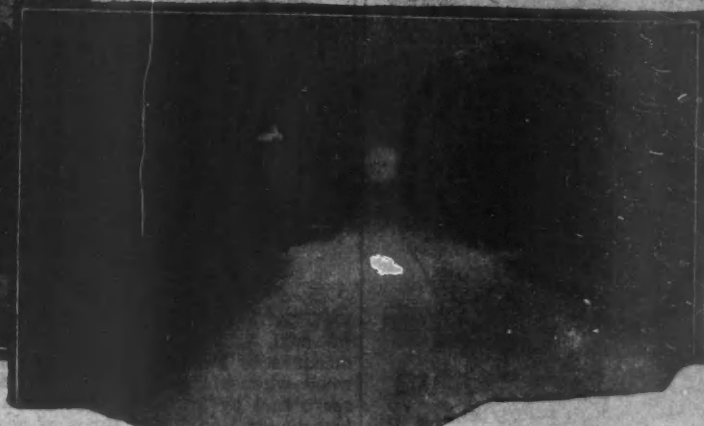
Ralph secured the services of several women from nearby farms at picking time. It was 5 miles to the village on the railway, and here he carted his crates of berries. Some of the stores bought a few, even farmers along the route patronized the boy, but in the main Ralph found the selling of his crop a hardship.

He finally made a flying trip to a city 30 miles away, taking with him samples of his berries, which were very nice large, meaty fellows, very

(Concluded on page 32.)



General Electric Novulus Highway Lighting Units make Santa Rosa Road so useful and so safe at night as it is in daylight.



Christmas Tree Avenue

Santa Rosa Road in beautiful Altadena, at the base of the Sierra Madres, is famous in Southern California because at Christmas time thousands of electric lamps are strung on the branches of the cedar trees that thickly line it—giving it the name of Christmas Tree Avenue.

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BETTER HOME DEPARTMENT

Ways of Saving on Fuel Bill

by E. W. Lehmann

DURING the war everyone who used coal was urged as a patriotic measure to buy it early, to use firewood whenever possible, and to conserve fuel by proper firings. This is just as good advice in times of peace as in time of war for the man who feels he should economize in fuel.

During the last few years, it has been true, practically without exception, that the price of coal has been considerably less during the early summer than in the late fall. It is logical that this should be the case. The price is simply following the law of supply and demand. If all users of coal would order early, it would mean more even distribution of labor for the miner and less congestion in the transportation of coal by the railroads, both of which result in a saving for the individual who burns coal. Those who burn coal and did not buy early this year should keep these facts in mind next spring.

Another way in saving in buying coal is to get a few neighbors to lump their orders together when you are ready to buy. Many coal dealers will make a nice discount on an order for one or two hundred tons when the regular price will hold when an order for only 10 tons is placed. The less handling there is between the mine and the consumer's bin, and the more general the demand is throughout the year, the lower the coal prices will be.

On a great many farms, considerable wood can be collected for fuel that is now going to waste. The small timber lot is a source of considerable fuel. There are nearly always some trees that might well be removed. The same is true of old orchards; some of the old non-producing trees might well be made into firewood. Corn cobs are another type of fuel that is used on many farms.

Saving fuel by giving attention to firing and to the care of the furnace or stove is an economy that can be practiced in every home. Attention should be given to the heating plant itself to avoid rapid burning of fuel when not desirable. An air leak that causes a draft when not needed is always wasteful. Much fuel can be saved by giving careful attention to the drafts, the temperature and moisture content of the air in the rooms, to method of firing of fuel, and to keeping the furnace or stove free from soot and ashes. By careful attention to drafts, overheating the house can be avoided. If the house gets too hot, due to a too rapid fire that has not been properly checked, the doors and windows will be opened to allow it to cool off. This can best be avoided by regular firing and proper use of the check drafts. The automatic draft regulator is a fuel saver, as well as a means of keeping a uniform temperature. The first cost of this type of device prohibits its use in many homes, but it is a good thing to prevent too rapid heating and to prevent the house from cooling off too much. Too long a period between firing allows the house to cool off and then if a real hot fire is built, there is considerable waste. Too much emphasis cannot be put on proper firing as a means of not only saving fuel, but also making the house more comfortable.

According to a statement in Circular No. 4 of the Illinois Engineering Experiment Station, the principal losses in a house heating plant are of

three kinds: First, a loss through the grate to the ash pit; second, a loss by radiation of heat to basement or part of building not intended to be heated; and third, the losses that go up the chimney. The loss through the grate is due to partially burned coal passing through with the ashes. Shaking the grates down too often will result in waste at this point. While this loss is usually considered low, it might be as much as 5 or 10 per cent of the total fuel. If coal is not broken too fine, and if care is exercised in keeping a fairly thick fire and poking and shaking the grate is not practiced, this loss can be reduced to a minimum.

The loss of heat by radiation in the basement can be reduced by proper use of insulating material. The furnace should be covered, also the pipes conducting the heat to the upstairs rooms. Heavy asbestos paper is quite satisfactory for this purpose. Adequate circulation of air through a warm air furnace will reduce the radiation loss to a minimum. If the cold air pipe is too small, heating is retarded and there is greater loss through radiation.

The greatest loss of fuel is that which goes up the chimney. Under rather favorable conditions, this loss may be as much as 40 per cent of all the fuel used. Special attention should be given to reduce this loss. One of the chief causes of unburned gases being lost is heavy firing at rather long intervals. If a hot bed of coals is entirely covered with fresh fuel, gases are driven off which pass out through the chimney without being burned. For greatest economy in firing, the coal should be spread on only a portion of the fire bed, leaving a part uncovered. When the firing is done this way, the gases that are driven off the fresh coal are ignited by the glowing fire that is not covered. In this way, the combustion is much more complete.

Pecan Growing Is Promising

(Continued from page 10.)

problem, and for this reason variety selection is the main hope. The Alabama Experiment Station is conducting some experimental work with pecans.

One objectionable feature of the pecan is that several years are necessary for it to begin bringing in an income. Frequently trees bear a few nuts the third year, but as a general rule eight or ten years are necessary before profits can be expected. Yields increase for many years. To offset this delay the land may be used for other crops.

Pecan growing in Dallas and the surrounding counties has reached the point that the organization of the Central Alabama Pecan Growers' Ass'n became necessary. Along with its work on production, this association is now making plans for more efficient marketing. As the years go by, the marketing problem will become greater, in which case a co-operative marketing association, affiliated with pecan growers in other sections and in other states, is very sure to become necessary.

When writing advertisers mention American Fruit Grower Magazine.

Winter Meetings

CONNECTICUT Pomological Society, Hartford, Conn., December 13 and 14. H. C. C. Miles, Secretary, Milford.

Illinois State Horticultural Society, Beardsley Hotel, Champaign, Ill., December 11 to 14. W. S. Brock, Secretary, Urbana.

Indiana Horticultural Society, Claypool Hotel, Indianapolis, Ind., December 12 and 13. H. H. Swaim, Secretary, Lafayette.

Kansas State Horticultural Society, Topeka, Kan., December 4 to 6. O. F. Whitney, Secretary, Topeka.

Minnesota State Horticultural Society, Minneapolis, Minn., December 4 to 7. R. S. Mackintosh, Secretary, St. Paul.

New Jersey State Horticultural Society, Haddon Hall Hotel, Atlantic City, N. J., December 4 to 6. H. H. Albertson, Secretary, Burlington.

New York State Horticultural Society, Rochester, N. Y., January 15 to 18, 1924. Roy P. McPherson, Secretary, Le Roy.

Eastern meeting of the New York State Horticultural Society, Poughkeepsie, N. Y., February 20 to 22, 1924. Roy P. McPherson, Secretary, Le Roy.

Northern Illinois Horticultural Society, Moline, Ill., December 4 and 5. R. A. Green, Secretary, Ottawa.

Ohio State Horticultural Society, January 28 to 30, 1924. R. B. Cruickshank, Secretary, Columbus.

Thirty-fifth annual meeting of the South Dakota Horticultural Society, Sioux Falls, S. D., January 8 to 10, 1924. Dr. N. E. Hansen, Secretary, Brookings.

Virginia State Horticultural Society, Roanoke, Va., December 3 to 7.

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**AMERICAN FRUIT GROWER
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Winter Injury to Grapevines

(Continued from page 7.)

familiar to all growers. The occurrence of a late frost, however, does not result in a complete failure of the crop in grapevines, as is ordinarily the case in fruit trees. When a freeze in early spring kills the bloom on fruit trees such as the apple, peach or plum, there is no crop that year. In the grape, on the other hand, when the first shoots are killed the second growths are likely to produce a partial crop through the stimulation to development of the buds that ordinarily would not have produced shoots during a normal season. While the crop from the second growth from grapevines is light, it is quite a departure from the complete failures in many of the other fruits. In connection with late frosts it is of interest to note that grapevines in the spring begin the leafing process under the influence of an average daily temperature of about 50 degrees Fahrenheit lasting for 10 days or two weeks.

Select Hardy Varieties.

Selection of hardy varieties; where possible, should be taken into consideration as a prevention of winter injury, although the Concord, which is the most common variety grown, is more or less subject to injury. Resistance to low temperatures appears to be a character of the species and is possibly correlated with hardness of the wood, a feature in which grapes are known to differ considerably. Labrusca influence definitely tends to lessen the tendency to such harm; varieties with Vinifera blood, in any combination, usually show a high percentage of winter injury. Aestivalis varieties appear slightly less affected, and Riparia still less, but more than the relatively hardy Labrusca crosses. Apparently no complete immunity from low temperatures is to be expected among species or varieties if maturity is not complete at the beginning of winter.

Control Measures.

While winter injury in very unfavorable seasons cannot be prevented, the evidence indicates that something can be done to lessen the amount of damage in such years and reduce it to a minimum in others.

Since immaturity predisposes to winter injury, those factors which tend to produce slow growth or to prolong unduly the season of growth contribute to winter injury. Severe pruning after damage by late frosts in the spring, or severe summer pruning, as practiced by a few growers in some localities, induces a rank growth of wood which is not apt to mature properly and therefore will suffer during the following winter.

Excess water in the tissues being correlated with immaturity in late summer and fall, it is obvious that practices tending to reduce the available supply are desirable. Poor drainage, which appears to be responsible for the majority of cases of winter injury, should be remedied. While it is a customary practice to discontinue all vineyard cultivation in late July or early August, the time should, however, be governed by the character of the weather, especially the rain fall, allowing the cover crops to grow longer if the soil is full of moisture so that the transpiration of these plants may lessen the water in the soil and check the luxuriance of the vines. Wide-leaved cover crops, or green-manuring crops, like rape and cowhorn turnips, may shade the ground so much, however, that the check of evaporation from the soil surface is more detrimental than transpiration of the plants is helpful. Where such conditions are anticipated, thin seeding should be practiced, or narrow-leaved plants like the grains, or sparse foliaged crops like buckwheat, will be found preferable, since they exert comparatively little effect. Slowly available forms of nitrogen should be avoided unless early, so that their stimulus to growth may not come so late that the wood is left immature.

Excessive or late applications of nitrogen in any form favor immaturity.

Snow or any other mulch, of course, is helpful in preventing winter injury. Wet spots and shallow soil are to be avoided as being more likely to favor winter injury.

In sections where winter-killing of the buds or shoots is anticipated it is preferable to delay the time of pruning until late winter or early spring. By so doing, the killing may be compensated for in the pruning, whereas if the winter injury occurs after the vines have been pruned back to the correct number of buds needed, the grower is powerless to compensate for it and must suffer a decrease in his crop.

Some Nut Growing Experiences

I have just been reading Mr. Mosnat's interesting article on "Nut Trees" in the July issue of your magazine and it occurred to me that a bit of my experience might be helpful to some of your subscribers who are interested in nut culture.

I always thought that every man who had a bit of land ought to be able to sit under his own nut, as well as vine and fig tree, and as a boy I grafted a number of young hickories on the place with some of our best local nuts. About six or seven years ago I took it up on a rather larger scale and at the present time I have a block of 5 acres running through the center of my apple orchard. On the lower and heavier soil I have the shagbarks, pecans, hybrids and black walnuts, and upon a higher, gravelly bit I "took a flyer" by planting 25 chestnuts. They all came, however, from states where there is no blight.

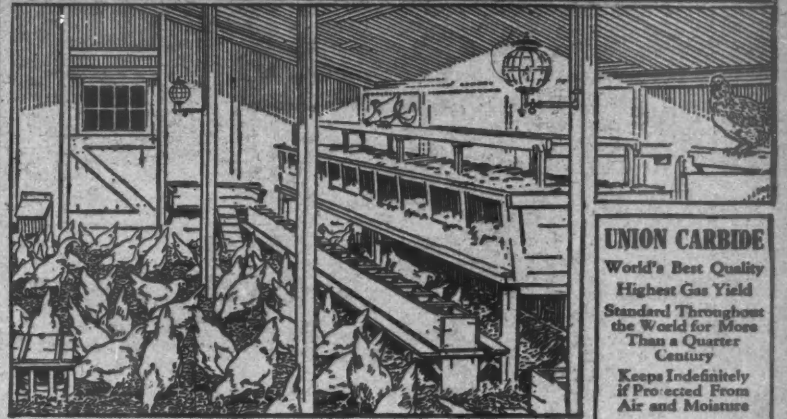
For a few years I used as a fertilizer a compost of barnyard manure and decayed forest leaves, with occasionally a little nitrate of soda or ammonium sulphate. I soon became convinced that all members of the hickory family could not get too much nitrogenous food or humus. Very late last fall I gave them a heavy application of horse manure. About the latter part of May, when the leaves were nearly fully developed and a splendid rank growth had started, I found one morning that during the night practically every tree—shagbarks, pecans, heart nuts, English walnuts and even a few seedlings not yet worked over—had been defoliated during the night. This year the trees are in sod with the exception of an area of about 6 feet in diameter around each tree, which was kept cultivated. Upon digging around in this area there was brought to the surface from 50 to 300 May beetles. They were the things that had stripped my trees and they kept them stripped for about 5 weeks.

One reason for my running a block of nut trees through my apple orchard was that they then would receive all the regular spraying; but the heaviest sprays that I dared use on the apples had no effect whatever upon the beetles. Just as soon as the nut trees would put out some new growth, which they did very rapidly, they would all be stripped again. And then, when the "May bug" had had its day, I declare if the rose chafer, which was the worst we have ever had this year, did not do the very same trick, though it did not repeat as the other beetles had done.

Now, I had many fruit trees—apple, pear and cherry—which had like applications of manure, yet the white grub or beetle never made its appearance about them. As an experiment, I selected a few trees and gave them a heavy application of salt and it seemed to end the trouble as in digging around them a few days later there was a terrific stench from dead beetles. The experiment was so limited, however, and there is such an element of possible injury to the trees that I do not feel justified in drawing any definite conclusion or rule for treatment. Unfortunately, I had used all my acid phosphate or I would have experimented with that,

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for that I believe would also have proved efficacious and there would be no danger element. I do not believe they could be poisoned like cut worms.

Thus far my experience in nut culture has been that I find they have vastly more enemies than any kind of fruit tree and that it is easier to graft or bud 100 apple or pear trees than one nut. My experience would also lead me to make the statement that for this section, unless modified by a large body of water or some other feature of nature, has too severe winters for growing the English walnut or heart nut, although the Pomeroy seedling will mature a fair crop after not too severe a winter and a favorable spring. I can make no statement yet regarding pecans, although a few varieties thus far have wintered well, but they are not yet old enough to mature fruit. The pecan-shagbark hybrids seem fully as tender as the straight pecans; so for this section of the Hudson Valley I would say that a few varieties of shagbark hickory nut—the Kirtland especially—and the improved varieties of black walnut would seem to offer the best chances of success in nut culture. But where one has a well protected or favorable location, one ought to try a couple of Pomeroy seedlings and pecan-shagbark hybrids, not only for the sake of variety but because those trees make very rapid

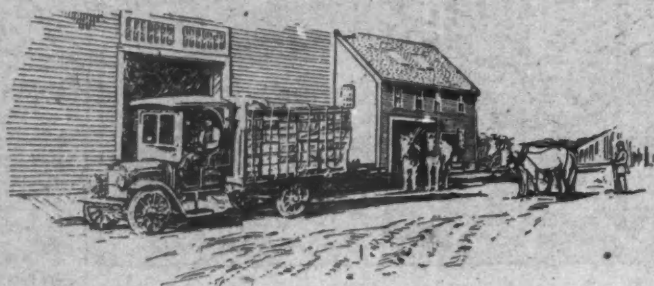
growth and fruit early. At the same time, from grafts on second growth hickories I have been able to get a few straight shagbark and hickory nuts in the third and fourth years after the grafts were set.—Harvey Losee, New York.

Fall Plowing

UNDER ordinary conditions, fall plowing is of little value in the orchard. On hilly land, it will remove the fibre and will allow for heavy erosion. On very light soils, it will allow for more disastrous freezing of tree roots. On heavy clay loams, the January thaw and early March rains will run the soil together so that by spring it will appear to have never been plowed. Fall plowing may have some advantage in encouraging soil activity early in the spring before the trees bloom, but it is problematical how much influence it has along those lines. We do know, however, in a general way, that very early spring plowing before the trees bloom is very desirable. It seems to start chemical and bacterial action in the soil, which the tree greatly needs, and it seems to stimulate the trees into producing a stronger bloom and a better set.

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of American Fruit Grower Magazine, published monthly at Chicago, Ill., for October 1, 1923.

State of Illinois, County of Cook, ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared Harry W. Walker, who, having been duly sworn according to law, deposes and says that he is the business manager of the American Fruit Grower Magazine, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher—Magazines, Inc., 53 W. Jackson Blvd., Chicago.

Editor—None.

Managing Editor—C. I. Lewis.

Business Manager—Harry W. Walker.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

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HARRY W. WALKER,
Business Manager.

Sworn to and subscribed before me this 4th day of October, 1923.
(Seal.) A. C. BAMBERGER,
(My commission expires Aug. 6, 1925.)

Making Motor Truck Pay

by R. B. Rushing

ONE DAY last summer I was about ready to start home from town, where I had sold a truck-load of fruit, when I met a man from an adjoining county who had just come in with a load. He had come 25 miles and his team was hot and tired. While we were talking, this man's neighbor drove up in his truck ready to start home. Both of these men have nice orchards and live on adjoining farms.

Here is what impressed me so much. The one man gathers a load and starts to market early in the day. He had no truck last summer and went with his mule team. He reached town late in the afternoon. The market was pretty well overstocked every day when he arrived. His fruit had already been in the crates and baskets for 24 hours and had been jolted over the roads, which were pretty rough. To be frank about it, his fruit was practically unmarketable and the following day it would have been in bad shape. He either had to take what he could get that afternoon, then stay in town all night or spend several hours of the night driving his tired team home.

Loads His Truck at Night.

His neighbor owns a truck. He bought it mostly on credit, he said, and was jeered at for "going in the hole for the blamed thing." But he loads his truck late in the evening, and goes to bed and sleeps as sound as a dollar till five in the morning and then starts for market. (I have been trying that myself a bit and it is pretty good to get to sleep all night knowing you can get there on time anyway.) By the time the city folks are out of bed and downtown looking for some fresh fruits and produce, he is there with his truck, loaded to the guard, and the fruit looks as if it had been gathered that morning.

If the market is slow, it is only a few minutes' drive to another town 10 or 12 miles farther on, and by noon or the middle of the afternoon he is on the way home, feeling fine.

This man with the truck, in telling me how he liked it, said it didn't kick at him when he went into the barn; he didn't have to go out before breakfast every morning to feed and curry it; he didn't have to worry about it getting scared at the train and running away from him; he could leave it standing on the street without any fear of having a runaway if anything unusual came along while he was gone; and he didn't need to worry about hurrying it on a hot day, or feel sorry for it when standing out in the rain. If it gets sick, which it will sometimes, he doesn't have to sit up with it at night unless he must have it on the road the first thing in the morning.

The mules are faithful animals and still have their place, but that place is not on the long haul, with perishable fruits and produce.

Community Hauling.

There are men who think that they can't afford to buy a truck, who think they do not have enough hauling for a truck to justify the investment. The interest on the investment is not such a big item, and when the truck is not in use it is costing practically nothing, provided it is properly cared for.

If a farmer does not have enough use for a truck to justify the investment, he can probably use the truck in doing hauling for a neighbor who has more hauling than he can do on time. Two fruit farmers I know quite well bought a truck together, and it was not long until their friendship was ruined. They had a falling out about using the truck, and one of them took it over and is doing lots of hauling for the fruit farmers in his neighborhood, and it is paying him well.

I like the spirit of this man Taylor, who bought his truck mostly on credit. He had great confidence in himself and he is now making his truck get his fruit to market and

getting money out of stuff that always had gone to waste. He, too, told me that he had made some good money hauling stuff to market for his neighbors when he did not have anything to haul, and in this way had made three of the payments that he had paid on his truck, and that he intended for his 16-year-old boy to drive one next year.

The Little Red Berry Did It

(Continued from page 29.)

attractive to the eye and engaging to the taste.

"If your berries are all like these," said the market man who looked over the boy's samples, "you need go no further. I will take all you have."

"I assure you there will be no culls, sir," assured Ralph, a feeling of pride thrilling him when he noted the admiration with which the dealer regarded his big strawberries. The young fruit grower found he had struck the right place for disposing of his crop. He drew to the railway and shipped every day during the season, checks coming twice a week in payment.

"You see, father," said Ralph, exhibiting his bank book to the elder Eckels after the season was over, "Didn't do so bad after all."

The farmer took the book, examining it closely. Presently a low whistle sped from his lips.

"What! You don't tell me that you got all this money for them little red berries!" roared the farmer, biting his lip to keep down his emotions. "Why, here are nearly \$500 to your credit after paying all expenses. That is more money than I ever got from any 10 acres I ever worked, and this came off from two measly acres."

"Don't you think now, father, that some of this land is adapted to fruit?" smilingly asked triumphant Ralph.

He did of course.

That first season was simply a starter. Since he had done so well Mr. Eckels told his son to go ahead and see what he could do with the high knoll which had produced very little during many years.

"I'll put peaches there," said the boy. "I am going in for apples too, later on, as well as all kinds of small fruits. I believe that this no good 60 is all right if it is worked as it should be."

The second year Ralph's berries were a considerably larger crop. City consumers had heard of his berries, since his name went on every box, and the price rose accordingly, so that the second year counted nearly a thousand dollars.

The money he made decided Ralph to stay on the farm and continue the good work of making it a fruit ranch.

"I swan, I wouldn't have believed it," spoke Josiah Eckels to one of his neighbors. "That boy of mine has more gumption than his dad ever had."

Ralph had the gumption all right, and kept at work, acquiring new fields, fertilizing, working, disking and harrowing till that old farm which had been considered a worthless piece of property rose up among the best lands in the neighborhood.

Ralph's other fruit came into bearing in due time. Mr. Eckels began to relax his severe labors, his son giving him to understand that it was time to take a good long rest.

"You and mother have wanted to travel and see other states," said Ralph one day to his father. "Take the time off this summer and go down east to Maine and see the old neighbors you left there in the long ago. From there go to Washington and see your country's capital; see Congress in session as you have often wished to do."

Mr. and Mrs. Eckels took the hint and went. They spent 3 months in their travels, finally landing on the porch of the Washington house at Mount Vernon.

"Only think, Martha!" exclaimed the one-time sand farmer. "Here we are visiting around like dukes and duchesses, and by gorry, it was the little berry that did it."

Care of Bees in the Winter

by H. F. Wilson

BEES, like other animals, to be productive must have good care and unless good care is given them, success can only be attained in a small way. The winter care of bees may be divided into three parts. First, the preparation of bees for winter; second, the care of bees during the winter, and third, care of bees in the spring. The winter period may vary from six months in the north to perhaps one month in the south. Regardless of the section of the country, bees should be given some kind of winter protection. In the north, they may be placed in suitable packing cases or in cellars provided especially for that purpose. In the southern parts of the United States, slip-over cases are desirable, although few beekeepers provide protection at all. The outside protection is especially desirable during the early spring months after brood rearing has started. Every outdoor apiary should be protected by a windbreak of some kind. Buildings, trees or fences high enough to break the force of the winds will do.

Bee Cellars and Their Care.

If bees are to be wintered in a cellar, careful attention should be given to the preparation of the cellar. The ideal bee cellar is one in which an average temperature of from 45 to 50 degrees Fahrenheit can be maintained during the entire winter period. Temperatures below 45 degrees Fahrenheit are objectional and any cellar in which ice or frost may form is hardly better than no cellar at all because it holds the cold, moist air and does not permit the bees to keep the interior of the hive dry. It is a common practice to provide the cellar with a ventilator of some kind, but usually it is not necessary to have ventilation of any kind, and one which permits cold air to enter the cellar and keep the temperature below 45 degrees Fahrenheit is more detrimental than beneficial. Keep the cellar absolutely dark at all times for even a single ray of light is often sufficient to disturb the bees. Bees wintered in basements usually come through better in the spring than those in outside cellars where artificial heat is not used. Cellars having no artificial heat or special insulation should be completely below ground and the ceiling below the frost line. All cellars should have the top protected by heavy insulation to keep the cold from penetrating from above. The entrance to the cellar should be protected by a double door or, better yet, should open through a vestibule. The doors should fit closely so that cold air drafts cannot enter around them. Visit the bee cellar frequently to see that everything is all right.

If the bees have good winter stores they will remain quietly in the hives and can be seen crawling about near the entrance. Occasionally in a good warm cellar the bees will cluster on the edge of the lighting board. This condition should cause no worry as it is not an indication that the colony is in trouble.

If bees are found flying out in the cellar it is a clear sign of dysentery and means that the bees have bad stores. There is practically nothing to do for colonies with this trouble except to set them out at the earliest possible date in the spring.

Setting Bees Out in the Spring.

The time best suited for setting bees out in the spring must be determined by local weather conditions. A good plan to follow is to carefully watch for blossoms on the willows. There is normally no reason for setting bees out in the spring before the bees can gather pollen. However, an exception may be made to this rule when bees are suffering from dysentery. Two or three weeks will make a great deal of difference to these colonies, if there is no snow on the ground so that the bees will not chill

where they alight. Set these colonies out in the spring on the first day that the temperature in the shade is 45 degrees Fahrenheit. The bees will be able to fly freely and the dysentery will disappear.

Spring Protection Desirable.

Bees wintered in packing cases appear to winter better than bees in the cellar. In reality this is not true. But colonies in the packing cases are protected during the early spring which is not true of those taken out of the cellar. Place some kind of a spring case over each colony as soon as it is set out and you will find that much better colonies will be ready at the time of the honey flow.

Hints on Marketing

MARKETING the crop after it is produced is today the most important phase of beekeeping. Some beekeepers have a native ability which helps them to sell easily. With others the problem is more difficult. Many different schemes for selling may be followed and oftentimes several of these are necessary.

Regardless of the method to be followed, however, some phase of advertising must be used to tell the people that you have honey to sell. Posters, newspapers and demonstrations are all good. A method now being followed by a few beekeepers with great success is the occasional running of a lantern slide in their local movie houses. This slide may contain a copy of your label and name and, in addition, should have on it, "For sale by local grocers."

If you really want to build up a good trade in your town, start co-operation with your local grocers. Let them sell at the same retail price which you ask. Then allow a discount of 20 per cent. To get started, put your honey in on a commission basis. Get your pay when the honey is sold. Have some posters about 16 by 20 in., made by a local painter, and put them in the windows of your grocers. Whatever you do, don't undersell the grocer. Also do not go around in the neighborhood where your grocers have trade, and peddle honey. If you think honey ought to move faster, solicit orders for your dealers and have the honey delivered through them. If you will do this, then strain your honey well and put it up in attractive packages. It can't help but sell.

If you are selling comb honey, be sure that the wood of the sections is scraped clean of propolis and all signs of dirt. Do not fail to grade your honey. No. 2 sections in with fancy or No. 1 tend to reduce the value of the latter.

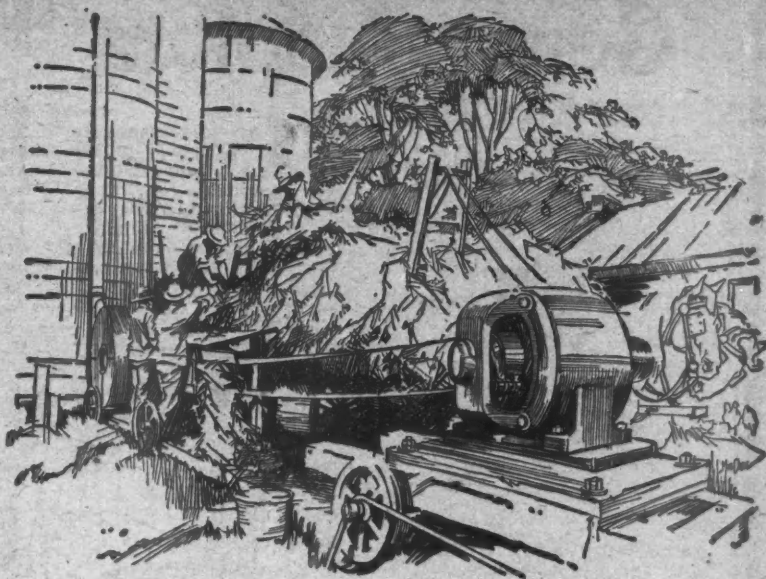
As a clinching argument guarantee every package of honey sold and let your customers know that if they are dissatisfied with what they buy, they can return it and get their money back.

New Apple Bulletins Out

TWO NEW bulletins of interest to apple growers are now available for free distribution at the New York State Agricultural Experiment Station at Geneva. One is entitled "How and When to Prune Apple Trees" and describes experiments covering a ten-year period in which various pruning methods were tried out on young apple trees of several standard varieties. The other publication deals with a series of long-continued tests with commercial fertilizers in representative New York orchards. The two bulletins may be had free of charge upon application to the Station.

Pruning Tests Continued.

The pruning experiments included tests with little and much pruning, winter and summer pruning, and high vs. low heading. One-year-old trees of Baldwin, Boiken, Esopus, Hubbards-



Electrical Farm Machinery

Greater development of electrical farm machinery of simple construction and high efficiency is required before satisfactory electric service can be furnished many farms whose owners eagerly look forward to farm electrification.

The electrical way of doing things is the modern way, the economical way, the healthful way. Electrically-driven machines have increased production, cut costs, and bettered working conditions for employees in manufacturing and commercial establishments. Similarly, they have revolutionized office work and housework.

These machines were devised because of the demand for them. There is a demand for electrically-driven farm machinery, and research work now being carried on by manufacturers and the National Electric Light Association gives promise of interesting, and perhaps epoch-making, developments in the near future.

When such machinery is available, and farm owners are able to use electric power as well as lighting service in sufficient amounts, it will become practicable, under constructive legislation and state-wide regulation, to extend electric service to many farms not yet reached.

NATIONAL ELECTRIC LIGHT ASSOCIATION

ton, McIntosh, Northern Spy, Rhode Island Greening, Rome Beauty, and Tompkins King were set out in the orchard and have been subjected to the different pruning methods for the past ten years. The experiments are to be continued in order that a study may be made of the effect of these different practices on the yield of fruit. To date the tests are said to show that relatively little pruning is required to shape the young apple tree properly, that winter pruning is usually more satisfactory than summer pruning, and that low-headed trees have distinct advantages over high-headed trees.

Commercial fertilizers in the better fruit districts of the State have not paid their way, according to the evidence secured by the Station specialists in long-continued tests in several orchards. Fruit growers located in these districts are advised to give more attention to the general care of the orchard with regard to cultivation, pruning, spraying, etc., rather than to spend money on fertilizers which are of doubtful benefit.

Subscribe for the American Fruit Grower Magazine—3 years for \$1.00.

A Remarkable Offer

Farm & Home "O. K." Poultry Journal - 1 Year \$1.00
American Fruit Grower - 1 Year
American Fruit Grower - 2 Years

A Dollar Bill Will Do—We Take the Risk—Mention Club No. 15.

American Fruit Grower Magazine
542 Monadnock Block, Chicago

MYERS HONOR-BILT SPRAY PUMPS

An absolute necessity for the successful citrus grower. Unequalled for easy, rapid, thorough spraying. Every desirable style and size. Hand Pumps with easy operating cog gear handle—Power Pumps with automatic pressure control—give powerful penetrating spray that reaches every leaf and blossom, every nook and corner. The Myers line includes Pumps for Every Purpose, Hand Tools and Door Hangers. Ask your dealer or write us.

THE F. E. MYERS & SONS CO.
150 Church St., Ashland, Ohio

To Sales Managers, and other executives or employers of men

A sure-fire Christmas remembrance for the "go-getters"

The man-to-man gift should be something of a friendly, masculine sort—and something that doesn't presume too much upon personal tastes. Men don't like to be sentenced to wear neckties, scarfpins, or other adornments of another's choosing.

As the ladies have not, as yet, taken up pipe-smoking, pipe-tobacco remains "he-stuff." Nothing up-stage about it, either; since the first Indian pipe-of-peace, tobacco has been a symbol of democracy and the brotherhood of man.



No harm is done if some lucky fellow gets two or three jars of tobacco from different friends.

Duplicates are welcomed. The more, the merrier Christmas.

Edgeworth is so generally liked that it's a safe, sure-fire present for men. In the glass humidor jar it keeps in condition indefinitely.

These 16-ounce jars are sold at \$1.65 at all tobacco stores; but if your regular dealer hasn't enough of them, we offer you this painless plan, just to relieve the pressure on Santa Claus:

Send us \$1.65 for each pound jar of Edgeworth to be sent out, a list of the names and addresses of those you wish to remember, together with your personal greeting cards.

We will pack each jar in an appropriate Christmas box, enclose your card, and send them all off in plenty of time to be delivered before December 25th.

Personal—If you are not personally acquainted with Edgeworth, send your name and address on a postcard to Larus & Brother Company. We will be glad to send you free samples—generous helpings both of Edgeworth Plug Slice and Ready-Rubbed.

Smoke a few pipefuls and judge for yourself whether or not you wish to become a permanent member of the Edgeworth Club.

Edgeworth is sold in various sizes to suit the needs and means of all purchasers. Both Edgeworth Plug Slice and Ready-Rubbed are packed in small, pocket-size packages, in handsome humidors holding a pound, and also in several handy-in-between sizes.

For the free samples, kindly address Larus & Brother Company, 83 South 21st Street, Richmond, Va. If you will also include on your postcard the name and address of your regular tobacco dealer, your courtesy will be appreciated.

To Retail Tobacco Merchants: If your jobber cannot supply you with Edgeworth, Larus & Brother Company will gladly send you prepaid by parcel post a one- or two-dozen carton of any size of Edgeworth Plug Slice or Ready-Rubbed for the same price you would pay the jobber.

A New Departure in Pear Pruning

(Continued from page 7.)

to the interior parts or else the fruiting area will be very largely confined to the outer periphery. In the writer's opinion this thinning might also very well accomplish a renewal of the fruiting wood by cutting away spurs which have outlived their usefulness and encouraging new growth to take their place. Since the oldest trees trained by this method are those of Mr. Caldwell, which are now but 10 years of

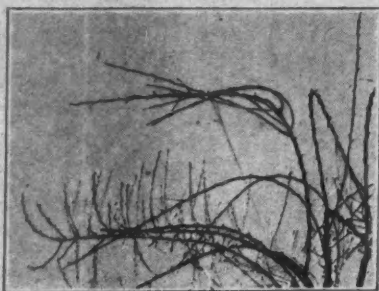


Fig. 4—A closer view of the distal end of a bent shoot after one season's growth.

age, this latter point has not been fully determined.

The cost of handling an orchard in this manner is probably somewhat greater during the first few years, but for the first 10-year period the expense will not be more than the average cost of pruning.

At five years Mr. Caldwell's trees averaged two-and-a-half, at six years three and at nine years practically eight packed boxes per tree. This is the average per tree over a block of 10 acres. The seventh and eighth years were crop failures due to severe freezes at blossoming time and the ninth crop was somewhat reduced by the same cause. These yields are far better than those commonly secured throughout the state where probably one box per tree the eighth or ninth

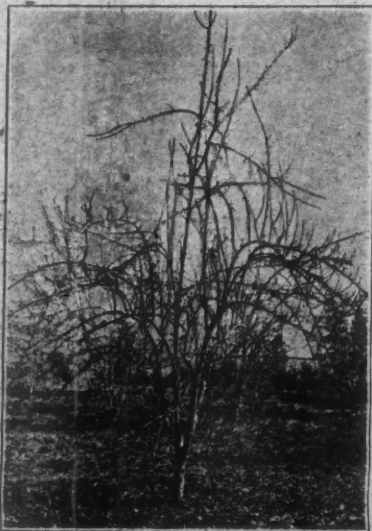


Fig. 5—A seven-year-old Bartlett pear tree in which two branches broke away from the tying and assumed their normal height.

season would be considered normal. For foothill conditions the yields obtained are phenomenal.

Advantages of This System.

The advantages claimed for this method are briefly: Large trees of good mechanical strength combined with a large fruiting area close to the ground are secured in a comparatively short period of years; trees come into bearing from two to four years earlier than trees which are trained by severe cutting back; trees can be trained to a more shapely form in a windy section or where prevailing winds hinder symmetrical development; and, finally, larger crops of comparable quality are harvested.

The disadvantages are that this system, to be successful, must be a part of a comprehensive and intensive orcharding program. Adequate moisture and fertility must be present in order to secure abundance of new wood and at the same time carry through to maturity large crops and to supply the enormous leaf area which is from year to year being increased. The man who does the tying must know trees and how to interpret their responses. Success will very largely depend upon the individual.

Knowing his own great interest in this departure in fruit tree training, the writer has presented the above scattering notes more in the way of a "news letter" rather than as a recommendation. He feels that under certain conditions the system has great merit for pear and possibly apple training. It will not work so well with the stone fruits.

The method is now on trial under various conditions and environments in different parts of California. The outcome of these tests will be interesting to note. Can the orchardist in a large way, employing the best labor available, parallel the results obtained on a comparatively small acreage by a thoughtful and observing grower who does practically all his own pruning?

American Grown Dates for American People

(Continued from page 4.)

been wrested from the parching grasp of the desert we find men—hundreds of them, and their number is constantly increasing—bankers, merchants, engineers, "retired capitalists" and others whose occupations represent a wide field of creative ability—many of them are college bred, others have won recognition through the special study and the labor involved in patient pursuit of an ideal. All are men of intelligence and verve and they find that date growing is a fascinating experience, a stimulus and a culminating success.

American grown dates can always be depended upon to reach the consumer in a much more sanitary and appetizing condition than can the foreign shipments with which we have oftentimes found justifiable cause for complaint. From first to last we must think of our American grown dates in terms of finer flavor, better packing and constant cleanliness, for these three features are items of their superiority over all others.

Classified Advertising

HELP WANTED—FEMALE

EARN MONEY AT HOME DURING SPARE TIME painting lamp shades, pillow tops for us. No canvassing. Easy and interesting work. Experience unnecessary. Nileart Company, 2208, Fort Wayne, Ind.

\$35 WEEK. WOMEN-GIRLS WANTED. LEARN gown making at home. Many winter openings. Learn while earning. Sample lessons free. Write immediately. Franklin Institute, Dept. E-548, Rochester, N. Y.

POSITIONS WANTED

A YOUNG MAN WANTS A POSITION IN AN orchard. Chas. B. Fitzgerald, Downingtown, Pa. R. D. No. 2.

NURSERY

FRUIT TREES DIRECT TO PLANTERS IN large or small lots by express, freight or parcel post. It will pay you to get our prices before buying. Free, 68-page catalog. Peaches, apples, plums, pears, cherries, grapes, nuts, berries, pecans, vines. Ornamental trees, vines and shrubs. Tenn. Nursery Co., Box 101, Cleveland, Tenn.

AUTOMOTIVE

AUTOMOBILE OWNERS, GARAGEMEN, MECHANICS, send for free copy America's popular motor magazine. Contains helpful, money-saving articles on repairing, overhauling, ignition, carburetors, batteries, etc. Automobile Digest, 613 Butler Bldg., Cincinnati.

TYPEWRITERS

TYPEWRITERS, \$20 UP. FREE TRIAL. EASY payments. Rebuilt Typewriter Co., Rosedale Station, Kansas City, Kans.

MISCELLANEOUS

FREE BOOK—ELIJAH COMING BEFORE Christ. Megiddo Association, Rochester, N. Y.

"AUTOMATIC GOVERNMENT"—WORLD'S greatest discovery to save civilization. \$1. New World, Benton Harbor, Mich.

Classified Advertising

ADVERTISING RATES

FIFTEEN CENTS a word for each insertion. COUNT each initial abbreviation, number or group of numbers as one word. All advertisements classified at option of publisher. No display type or illustrations permissible. Forms close 15th. SPECIAL NOTICE—All advertising copy, discount orders or change of copy intended for the Classified Department must reach this office by the 15th of the month preceding date of issue.

FARMS AND ORCHARDS

SMALL FARMS IN WINTERLESS CALIFORNIA You can work a small farm with less capital investment. And in California you can work out doors all the year. The State Land Board of California is offering choice twenty-acre farms at Ballico, Merced County, on 30 years' time. Climate is delightful, with long growing seasons. Twenty acres, part in alfalfa, with cows and pigs, plus ten acres in orchard, makes a well balanced place and provides a good income throughout the entire year. A small one-family farm, cutting out high labor costs, insures success. The San Joaquin Valley of California offers you this opportunity. There are no winter handicaps. Illustrated land folders descriptive of California mailed on request. C. L. Seagraves, General Colonization Agent, Santa Fe, N. M., 911 Ry. Bldg., Chicago, Ill.

BEARING ORCHARD OF 1400 TREES (APPLES and 300 peach trees. More than half the apple trees are Stark Delicious and Golden Delicious, other trees of the best varieties. This orchard is five miles from the Hendersonville Court House on 110 acres of land. Tools and spraying outfit, packing shed and old house. From orchard there is an unbroken view for 17 miles to Carolina State line and from Pisgah to Sugar Loaf. This property can be bought for \$8000. Next spring will not sell for less than \$10,000. It is well watered by springs of the purest water. Henry P. Co. with, Saluda, N. C.

FLORIDA, TAMPA AND HILLSBOROUGH County invite you to winter here. Live on doors. Wonderful orange groves, vegetable gardens, tropical scenery. Strawberries Christmas to June. Fruits and flowers in profusion. Motor fish, hunt, go boating on lakes, rivers, Tampa Bay or Gulf of Mexico. Health-restoring, balmy weather. Splendid business and investment opportunities. Living costs reasonable. Come. You will live longer and enjoy life more. Write for literature. P. Young, Board of Trade, Tampa, Florida.

FARM WANTED—IMMEDIATELY. SEND PICTURE. Mrs. A. Roberts, 320 E. Troy, Rock house, Ill.

WANTED TO HEAR FROM OWNER OF LAND for sale. O. K. Hawley, Baldwin, Wisconsin.

TOBACCO

HOMESPUN TOBACCO—FIVE POUNDS CHWING. 1 lb., \$1.75; 10 lb., \$15.00; 20 lb., \$25.25. Smoking five pounds, \$1.25; 10 lb., \$2.00; 20 lb., \$3.50. Pipe and recipe free. Send no money. Pay when received. Kentucky Tobacco Company, Paducah, Ky.

TOBACCO—SELECT THREE-YEAR-OLD LEAF. Nature cured, 3 lb., chewing, \$1.00; 4 lb., smoking, \$1.00; 7 lb., No. 2, smoking, \$1.00. Pay for tobacco and postage when received. Farmers Grange, Hawesville, Ky.

NATURAL LEAF TOBACCO—Chewing, 5 lb., \$1.75; 10 lb., \$3.00. Smoking, 5 lb., \$1.25; 10 lb., \$2.00. Pay when received. Pipe and recipe free. Farmers Tobacco Union, B-27, Paducah, Ky.

RED BURLEY SMOKING TOBACCO, 4 YEARS old. By mail, 50c the pound, 5 pounds \$2.00. C. F. Kleiderer, Henderson, Ky.

AGENTS WANTED

AGENTS—\$4 AN HOUR FOR YOUR SPARE TIME. Write for Canvassers' Outfit containing 18 samples of guaranteed line of pure flavors, perfumes, soaps, toilet preparations, etc. Sell in every home. Big repeaters. Steady income. Send for Sample Case today. Light weight. Beautiful appearance. American Products Company 6778 American Bldg., Cincinnati, Ohio.

EARN \$110 TO \$250 MONTHLY. EXPENSES paid as Railway Traffic Inspector. Position guaranteed after completion of 3 months' home study course or money refunded. Excellent opportunities. Write for Free Booklet G-100. Standard Business Training Inst., Buffalo, N. Y.

BUG SALESMEN—GET NEXT TO THE BIG best seller of the year—Loomis Felt Hop. Sell at sight at \$2.50, cost \$1.50. Big, complete Bug Catalog. Free. Malsley-Payne Mfg. Co., 104-K Hanover St., Boston, Mass.

WE WILL PAY YOU AT THE RATE OF \$500 per barrel selling quality lubricants to auto and tractor owners, garages and stores. Sell now for immediate and spring delivery. We have been in business 40 years. The Manufacturers Oil and Grease Company, Dept. 11, Cleveland, Ohio.

SALES AGENTS, MEN OR WOMEN, YEAR round positions. No lay-offs. Take orders for Jennings New Guaranteed Hosiery. Must work and give satisfaction or replaced free. Write for outfit. Jennings Mfg. Co., Dept. 104, Dayton, Ohio.

FINE CHRISTMAS GOODS—NOW READY. Send for beautiful picture book—open its cover and let people buy. Dr. Blair Laboratories, Department 530, Lynchburg, Virginia.

WE PAY \$50 A WEEK AND EXPENSES AND give Ford auto for man to introduce poultry and stock compounds. Imperial Co., D-20, Parsons, Kansas.

EARN \$25 MONTHLY. SPARE TIME. WRITING for newspapers. Exp. unrec., details from Press Syndicate, 979, St. Louis, Mo.

HELP WANTED

MEN-BOYS, 18 UP, WANTED FOR U. S. GOVERNMENT Life Jobs. Commence \$125 month. Rise to \$192 month. Vacation. Every second week off—full pay. Common education sufficient. Full unnecessary. Write today for free list positions. Franklin Institute, Dept. E-104, Rochester, N. Y.

ALL MEN, WOMEN, BOYS, GIRLS, 17 TO 65 willing to accept Government Positions, \$125, 250, traveling or stationary, write Mr. Osmer, 250, St. Louis, Mo., immediately.

RAILWAY POSTAL CLERKS; START \$1 month. Railroad pass; expenses paid; question free. Columbus Institute, S-6, Columbus, O.

Fordson

"To put the farmer on a par with the city manufacturer. To put his produce factory—for that is what a farm is—on an efficient production basis."

Spurred by this ideal, Henry Ford brought the Fordson Tractor into being.

Himself a farm boy, who had followed the plow for many a weary mile, no one knew better the need for quicker and easier farm power.

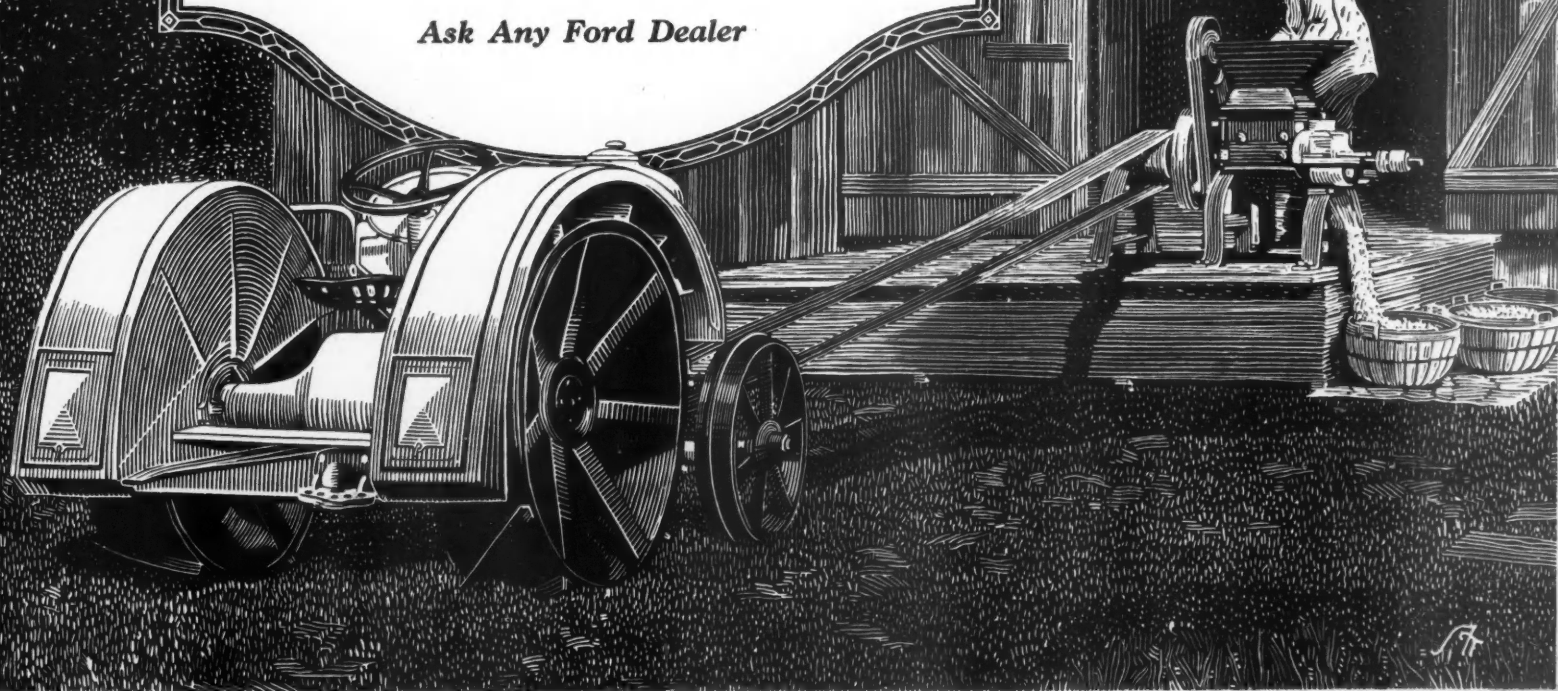
Producers in other fields were harnessing steam, gas and water power to drive wonderful machines which multiplied many fold the day's work of the individual.

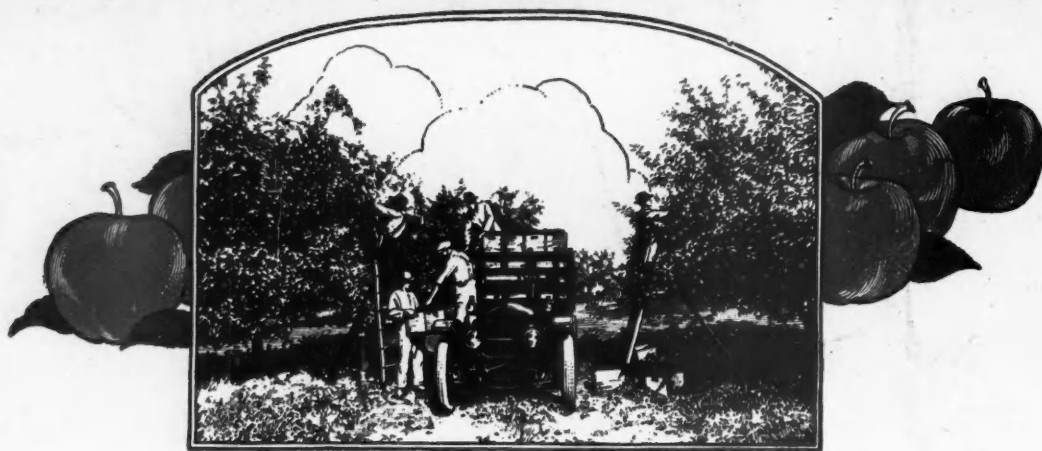
But the farm was at a disadvantage. This power machinery which brought such rewards in the form of bigger profits and better working conditions in the cities was lacking. A smaller income was returned in proportion to the work done.

That the Fordson should never falter in making possible a better day on the farm, a score of years of patient work preceded it. Today on hundreds of thousands of farms it increases the daily work done, adds to the farm income and allows a more pleasant farm life.

Ford Motor Company
CARS · TRUCKS · TRACTORS

Ask Any Ford Dealer





Yonah Fruit Co's Experience Shows the Economy of SCALECIDE

THE YONAH Fruit Company is one of the big orchard concerns of the country. It is located down at Cornelia, Georgia. Three years ago Yonah decided to use lime-sulphur instead of SCALECIDE—to save money! The manager reported that they “gave a very thorough spraying of lime sulphur solution, using 161,250 gallons of material on the dormant spray alone,” but the following fall he found it necessary to spray practically all of the orchard with SCALECIDE, “as scale had shown up on most all varieties of apples”. For this, they purchased 60 barrels of SCALECIDE which makes 48,000 gallons of solution.

It cost Yonah, at only one cent a gallon for labor, wear and tear of apparatus, \$1612.50, exclusive of material, to spray with lime-sulphur, and \$480.00 to spray with SCALE-

CIDE — a saving of \$1132.50 by using SCALECIDE. Yonah's experience shows the effectiveness and economy of SCALECIDE for you.

On every tree, shrub and vine that sheds its leaves in winter — use SCALECIDE as your dormant spray. Then you will know that you have done all that can be done at that particular time by any dormant spray or combination of sprays. Fall spraying with SCALECIDE controls psylla and peach leaf curl. Spring application controls aphids, pear thrips, leaf miner, case bearer and leaf roller. Either fall or spring spraying with SCALECIDE controls scale, bud moth, European red mite, fungus or blight cankers from which are spread fire blight, collar rot and root rot. And in addition, year after year use of SCALECIDE invigorates the trees.

WE GUARANTEE that, if you will divide an orchard, your worst or best, in two parts equal in general condition, and for three years spray one part with SCALECIDE according to our directions and the other part with lime sulfur, giving the same summer treatment to both parts, the part sprayed with SCALECIDE will be better than the part sprayed with lime sulfur — in the judgment of three disinterested fruit growers — or we will refund the money you have paid for the SCALECIDE.

SCALECIDE is not an emulsion but a miscible oil that mixes instantly with cold water and stays mixed without agitation. Its continuous use for the past twenty years throughout the fruit-growing world has proven that it will not do injury such as has been so often attributed to oil emulsions and improperly made miscible oils. If your dealer doesn't carry SCALECIDE, show him this advertisement — or order direct from us. In any event, write today for the new booklet, “The Ounce of Prevention”.

B. G. PRATT CO. Department 11

50 Church St. NEW YORK, N. Y.

SCALECIDE

Copyright 1922 **THE COMPLETE DORMANT SPRAY** B.G. Pratt Co.

SCALECIDE

